

NETWORK WORLD

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Rift among vendors may delay DME

By Paul Desmond
Senior Editor

CAMBRIDGE, Mass. — Vendors helping to build the Open Software Foundation, Inc.'s (OSF) Distributed Management Environment (DME) last week said architectural differences threaten to delay shipment of the integrated network and systems management platform.

At the core of the disagreement between OSF and some of the eight vendors contributing technology to the project is concern over whether the DME's object-oriented features can be delivered in a timely fashion.

Some DME contributors maintain that if OSF insists on including the technology in the first DME release, it will be late to market and may lose credibility.

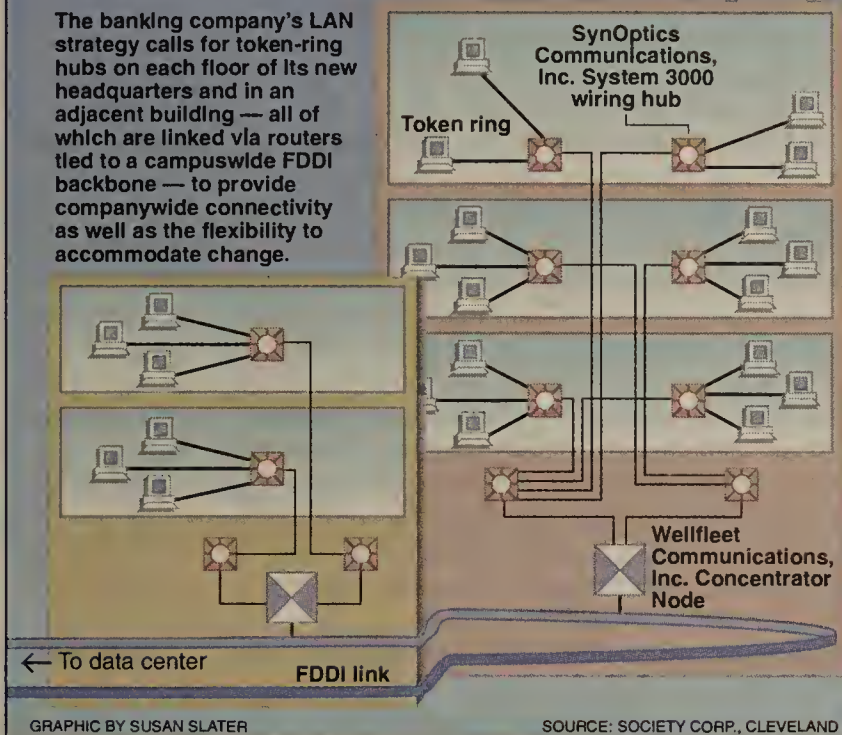
Jonathan Gossels, business area manager for OSF, based here, vehemently denied that charge and said the DME integration process is on track.

But some of the vendors involved in the project told a different story. "I think it's going to be late," said one vendor who requested anonymity. "It's not that it can't be accomplished; it's a question of doing it within the time frame we want."

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Society Corp.'s LAN wiring infrastructure

The banking company's LAN strategy calls for token-ring hubs on each floor of its new headquarters and in an adjacent building — all of which are linked via routers tied to a campuswide FDDI backbone — to provide companywide connectivity as well as the flexibility to accommodate change.



Firm looks to LAN internet to support future growth

By Bob Brown
Senior Editor

CLEVELAND — Talk about your tall orders.

Officials at Society Corp. last year instructed network designers to decide on a LAN internet-network architecture for the 57-story building that will serve as the banking conglomerate's new headquarters beginning this spring.

The catch was that network personnel had to design the net with enough flexibility to handle

whatever technologies the bank's various departments may decide to implement initially as well as accommodate future needs without major changes.

"We want to provide access to information anytime, anyplace, and that's why we need totally [interconnected local-area networks]," said David Gusman, Society's manager of telecommunications research. "This project will be viewed as a success if we don't have to rewire in the next (continued on page 46)

Users condemn RBHC efforts to slow CCS7

Groups warn installation postponement could hurt 800 portability and rollout of advanced services.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Users last week attacked Pacific Telesis Group for trying to slow the FCC-mandated pace of CCS7 network installation, saying the carrier's action could trigger a wave of delay requests and jeopardize 800-number portability and deployment of advanced services.

Pacific Telesis told the Federal Communications Commission last month it would be nearly impossible to meet the agency's March 1993 deadline for Common Channel Signaling System 7 deployment. The carrier, which serves both California and Nevada, said it would cost more than \$115 million to meet the deadline and asked for approval to move more slowly in rolling out CCS7.

The regional Bell holding companies and GTE Telephone Operations are scheduled to file plans on March 1 that detail how they will meet the agency's deadline. Southwestern Bell Telephone Co. has already gone to court challenging the FCC's authority to order expedited installation of CCS7.

In filings with the FCC last

week, users blasted Pacific Telesis for failing to justify a delay, which could have serious ramifications for user nets.

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Interoperable ISDN

Bellcore's National ISDN 2 specifications standardize:

ISDN Primary Rate Interface service

Key ISDN features such as:

- Call-by-call service selection
- Caller ID
- Call forwarding
- Call waiting
- Passive bus

Carrier provisioning and billing procedures

SOURCE: BELL COMMUNICATIONS RESEARCH, LIVINGSTON, N.J.
GRAPHIC BY SUSAN J. CHAMPENY

Bellcore set for next step in ISDN plan

By Bob Wallace
Senior Editor

LIVINGSTON, N.J. — Bell Communications Research is expected to unveil by midyear an expanded array of Integrated Services Digital Network interoperability specifications that cover a broad range of ISDN services and features.

The National ISDN 2 specification outlines a standard implementation of ISDN Primary Rate Interface (PRI) service and its call-by-call service selection feature, as well as Basic Rate Interface (BRI) features such as caller identification.

Network vendors can build to the specifications to ensure equipment interoperability and enable carriers to provide common ISDN service offerings. Adoption of the National ISDN 2 (continued on page 47)

NETLINE



IBM, NOVELL PROMISE to shake up mid-level net management market. Page 2.

UB BOLSTERS NET net management platform. Page 2.

IBM ENHANCEMENTS EASE integration of AS/400 in SNA, multivendor nets. Page 4.

PEPSI PLANS TO consolidate traffic on international X.400

network. Page 4.

BELL ATLANTIC BEEFS up quality standards to prevent network outages. Page 4.

ROCKWELL TO IMPROVE PBX-to-host software to support more host links. Page 4.

AT&T'S ALLEN LOBBIES Congress to shut RBHCs out of new telecom markets. Page 6.

FEATURE

Vendors spice up ACD market with new options

By Tom Fermazin
Special to Network World

If variety is the spice of life, then the automatic call distributor (ACD) market has gotten very spicy indeed. A plethora of emerging carrier services and microcomputer-based software products are presenting users with new options to traditional ACDs.

Many local telephone companies now offer Centrex-like ACD services. One long-distance carrier, MCI Communications Corp., hints it will roll out a network-based ACD service

sometime this year. There is even new microcomputer-based software reaching the market from firms such as Unifi Communications Corp. that can re-route incoming calls to various sites without the aid of a customer-owned switch.

Choosing one of these offerings enables users to sidestep the expense and management chores of owning a traditional stand-alone or integrated ACD system — the mainstay of the telemarketing industry. A Buyer's Guide chart comparing (continued on page 43)

Software builds documents from array of data sources

Interleaf's new WorldView lets users pull together information from text, graphic and other files.

By Joanne Cummings
Staff Writer

BOSTON — Interleaf, Inc. last week unveiled software that enables users to create electronic documents using information culled from different word processing and graphics programs and distribute them to a variety of computers across a network.

Interleaf's WorldView software is being incorporated into a new Sprint International frame relay and X.25 network management system to provide context-sensitive on-line help.

"When we decided to put the help documentation on-line, our main priority was to find a tool that would make it easy," said

Gain Buntin, manager of product documentation at Sprint International. "WorldView makes creation of the on-line document really intuitive. There was no programming involved."

WorldView consists of two portions. The first, WorldView Press, is software for document developers that resides on any Reduced Instruction Set Computer (RISC)-based workstation, including those from Apollo Computer, Inc., Data General Corp., Digital Equipment Corp., Hewlett-Packard Co., IBM and Sun Microsystems, Inc.

WorldView Press takes documents from major word process-

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IBM, Novell entries change face of integrated mgmt.

Top vendors too strong for contenders to last.

By Paul Desmond
Senior Editor

Now that industry heavyweights IBM and Novell, Inc. have entered the ring, smaller vendors of mid-range integrated network management systems are facing the threat of a knockout blow.

Vendors, analysts and users agree that only a limited number of so-called open integrated management platforms can survive because equipment makers and independent software vendors can only afford to develop management applications for a select few. IBM's new AIX NetView/6000 and Novell's NetWare Management System (NMS) will be high on any vendor's list.

"There's absolutely going to be some kind of shakeout in the industry," said David Passmore, a partner at the consultancy Ernst & Young in Vienna, Va. "End users have to think very hard about which of these platforms will be a survivor."

Observers say the smart money is riding on Hewlett-Packard Co.'s OpenView, Novell's NMS and SunNet Manager from the SunConnect unit of Sun Microsystems, Inc. (NetView/6000 is regarded as part of the OpenView camp because it was based on HP technology.)

HP has the endorsement of IBM, and key portions of Open-

(continued on page 46)

UB distributes management to local NetDirector users

By Maureen Molloy
Staff Writer

SANTA CLARA, Calif. — Ungermann-Bass, Inc. last week enhanced its NetDirector network management platform to enable users to distribute net management to local users while retaining centralized control.

In order to implement its Adaptive Internetwork Management (AIM) enhancement, Ungermann-Bass has added a Simple Network Management Protocol agent to the NetDirector server and made it possible for the NetDirector to alternate between an SNMP manager and an

enterprise manager agent. NetDirector is the company's OS/2-based client/server network management platform.

Warren Waldbrand, director of research at monthly research publication "Network Management Report," said the enhancements will enable users to build management systems that better fit their organization's structure — whether it is distributed, centralized or hierarchical.

"Historically, autonomy in local management is achieved at the expense of global control," Waldbrand said. "AIM lets one

(continued on page 46)

Briefs

ANSI trims field of FDDI proposals. An ANSI X3T9.5 subcommittee met in Austin, Texas, last week to study proposals for a Fiber Distributed Data Interface-over-copper wire standard. The subcommittee narrowed its focus to two technologies — one the result of a joint effort by Cabletron Systems, Inc. and National Semiconductor Corp. and another from a group led by Crescendo Communications. Hewlett-Packard Co. volunteered to run tests comparing the two FDDI-over-twisted pair technologies and present its findings at an ANSI meeting in April.

Artisoft takes aim at NetWare 2.2. Artisoft, Inc. last week unveiled a significantly enhanced version of its LANtastic network operating system, which it intends to pit against Novell, Inc.'s NetWare 2.2. According to Artisoft, LANtastic Version 4.1 offers 20% to 30% better performance than earlier versions, providing users with a viable alternative to Intel Corp. 80286-based versions of NetWare. LANtastic Version 4.1 also includes better systems management to help administrators install larger networks. A five-user version of NetWare 2.2 costs about \$900, while a network version of LANtastic 4.1, for those customers purchasing Artisoft local-area network adapters, costs only \$99.

Vendors demo FDDI net mgmt. Four vendors last week demonstrated station management technology (SMT) in a Fiber Distributed Data Interface network, showing how SMT can manage and control a multiprotocol FDDI network from a single station anywhere across an enterprise.

IBM, Synernetics, Inc., SynOptics Communications, Inc. and 3Com Corp. built the FDDI network with standard off-the-shelf components that each offer. The devices support the Status Reporting Frame (SRF) and Parameter Management Frame (PMF) features of the FDDI SMT standard, enabling FDDI devices to be remotely managed regardless of net protocols. Although SRF and PMF are defined under SMT, they are not mandated for inclusion in vendor products.

Banyan, Compaq expand pact. Banyan Systems, Inc. and Compaq Computer Corp. last week announced an agreement under which both

companies will develop and implement new features for Compaq personal computers to operate Banyan VINES nets. Although short on specifics, the vendors said they will participate more actively in each other's product development processes, designate cooperative development teams and exchange source code to facilitate the efforts. James D'Arezzo, Banyan's vice-president of marketing, said the two companies can work to provide VINES users with access to high-performance server platforms. The two companies are already codeveloping integrated VINES support for the Compaq System Manager, a systems management product. In the future, the vendors will allow the Compaq System Manager to monitor VINES data.

IBM offers AS/400 PBX link. IBM last week unveiled a new version of its CallPath/400 that enables users to link AT&T's recently announced Definity Generic 3I private branch exchange directly to IBM Application System/400 minicomputers. The switch-to-host software will allow users to enhance customer service by speeding call processing in call center applications. CallPath/400 Version 2, Release 2 will be available in December and range in price from \$2,080 to \$51,300.

U.S. charges EC with discrimination. On Friday, the U.S. Trade Representative's Office cited the European Community for discriminatory policies in network equipment procurement. Carla Hills, the U.S. trade representative, issued a report to Capitol Hill stating that government-operated carriers in the European Community member states are actively favoring domestic suppliers over foreign telecommunications manufacturers.

Hills said European Community members' current informal approach to discrimination will be supplanted by a formal policy embodied in the European Community's Utilities Directive, scheduled to take effect Jan. 1, 1993. The directive would require European Community carriers and utilities to favor European Community-made goods and services over U.S. and other foreign products. Hills said President Bush intends to impose sanctions on European Community member states by 1993 if they do not back away from the directive.

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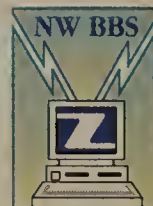
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IBM adds new data sharing options to AS/400 minis

Also eases mgmt. of devices attached to minis.

By Jim Duffy
Senior Editor

NEW YORK — IBM last week announced networking enhancements for its Application System/400 line in an effort to bolster the minicomputer's ability to share data in SNA and multivendor environments.

IBM also unveiled several systems management products, giving users greater control over hardware and software attached to AS/400s across an enterprise network.

"We want to make sure we become more open so the AS/400 fits into as many networking environments as it can," said Terry Baehr, director of Application Business Systems marketing for IBM U.S. Marketing & Services.

IBM's new OS/400 Version 2, Release 2 features a new network routing facility that enables IBM 3270 devices attached to a System/390 mainframe to access AS/400 applications.

A 3270 user requests access to the AS/400 by establishing a link to the host, where the front-end

processor reroutes the 3270 data stream to the minicomputer. The AS/400 then converts the 3270 data stream to a 5250 terminal data stream, allowing the user to access any AS/400 application.

Once the session is set up between the AS/400 and the 3270, the routing facility converts the 5250 data stream back to a 3270 data stream and routes it to the front-end processor, which sends it to the user.

Systems management

OS/400 Version 2, Release 2 also features a Systems Network Architecture alert filtering and routing feature that allows users to collect network alerts — such as disk crashes or software errors — and pass them to the appropriate work groups for resolution.

In addition to filtering and routing SNA alerts, the new systems management facilities in OS/400 Version 2, Release 2 allow users to save files while they are still in use. It also assists operators by providing simplified

menus for scheduling system backups, managing users logged on to the system and managing system disk space.

Other systems management upgrades rolled out by IBM last week include two new system administration tools. Central Systems Administration Tools/400 and Distributed Systems Administration Tools/400 allow an operator at a central AS/400 to manage and control the hardware and software of all the AS/400 systems in the network. The operator can plan and track the distribution of files and applications, manage program fixes and audit network configurations
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Pepsi to put data and fax onto global X.400 network

By Barton Crockett
Senior Editor

SOMERS, N.Y. — Pepsi-Cola International last week revealed plans to consolidate data, facsimile and telex traffic from more than 60 countries onto an international X.400 messaging network that will be managed by Digital Equipment Corp.

The international division of PepsiCo, Inc., based here, hopes to save money by moving fax and telex traffic off public telephone and telex services and combining it with traffic currently on public packet nets in order to reap large volume discounts.

"If we combine and consolidate everything into one format, we can start to do some real net optimization," said Vicki Hill, Pepsi-Cola International's telecommunications manager.

The consolidation will also help Pepsi-Cola International deal with the big boom in global net traffic expected in the next few years as the soft drink company moves ahead with plans to quadruple international sales by 1995, Hill said.

Last year, Pepsi-Cola International had revenues of \$1.7 billion, nearly 9% of PepsiCo's \$19.6 billion in revenues.

Pepsi-Cola International has offices in more than 60 countries

and does business in more than 120 countries.

Contract pending

Hill said Pepsi-Cola International expects to sign a contract this week to buy a VAX-based X.400 messaging system from DEC that will serve as the switching hub of the soft-drink company's international X.400 network.

The VAX hub will be located at a DEC site in the U.K. and will be maintained by the computer maker.

Pepsi-Cola International expects to have its X.400 network up and running by July.

Hill explained that data, fax and telex traffic will be encapsulated in X.400 messages by personal computers on users' desks and handed over to packet assembler/disassemblers in the office.

The PADs will transmit the information to the U.K. hub over local and international X.25-based public packet networks.

Message movement

The hub will dump fax and telex messages into the public telephone or telex net for transmission to end locations, which are mostly off-net sites. Text messages will be stored at the hub until they are retrieved by end users.

Pepsi-Cola International also plans to install in the local offices a router or server-based system that will be intelligent enough to determine if a fax or telex message is bound for a destination in the same city or country, Hill said.

Messages could then be routed to local fax or telex machines, which could transmit the messages over domestic public telephone or telex networks.

Cutting travel

According to Hill, the company is relying on DEC to install and maintain the X.400 messaging systems because Pepsi-Cola International does not have the staff resources to manage the network.

The company recently contracted with Spain's monopoly carrier, Compania Telefonica Nacional de Espana, to install, manage and maintain all of its public X.25 services in Latin America.

Hill added that Pepsi-Cola International is considering using Telefonica to manage its international packet services as well.

Outsourcing will also let Hill, who is Pepsi-Cola International's only telecommunications manager, reduce her travel schedule to reasonable proportions. Hill said she spent about 80% of last year traveling for work. She said she hopes to spend only about 30% of her time on the road this year. □

Bell Atlantic wants vendors to disclose product troubles

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — In an effort to fend off a recurrence of the outages it suffered last summer, Bell Atlantic Corp. last week said it is beefing up its quality standards, one of which will require suppliers to disclose product problems discovered by other customers worldwide.

Bell Atlantic, which is currently drafting language to go out in all new equipment bids, is the first regional Bell holding company to make such disclosures a condition of doing business.

Other RBHCs say they expect vendors to report product problems, but they have not formalized that request in contracts. Bell Atlantic's disclosure requirement will apply to all network hardware and software the carrier purchases.

In addition, Bell Atlantic is re-examining internal procedures and policies to ensure the highest possible level of redundancy and quality control, said John Seaz-

holtz, assistant vice-president of switching technology analysis, at a press briefing here last week.

Among other things, the carrier said it would safeguard its network by purchasing equipment

Bell Atlantic's disclosure requirement will apply to all network hardware and software.

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and software from multiple vendors, configure the network so redundancy is provided by multi-vendor products and implement special computer controls that prevent single points of failure for critical net components.

The carrier said such policies might have made it possible to
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Rockwell set to introduce enhanced ACD-to-host link

CGII software now supports up to 9 host links.

By Joanne Cummings
Staff Writer

DALLAS — Rockwell International Corp.'s Switching Systems Division is expected to unveil at the Call Center '92 show here on March 3 an enhanced version of its PBX-to-host product that adds support for inbound call management and multiple host links.

The product, called Contact Gateway II (CGII), runs on a Tandem Computers, Inc. minicomputer. CGII automatically identifies incoming calls by the caller's number, uses that data to retrieve the caller's file from a host and routes both to a waiting agent.

Like the earlier product, Contact Gateway, CGII can be used to generate outbound calls, providing call center agents with a customer's file at the same time an outbound call is connected.

CGII comes with ready-to-use call center applications, unlike other call management systems such as IBM's CallPath, which requires users to build their own applications, according to Nick Parsons, product manager at Rockwell.

The software runs under Guardian, Tandem's proprietary operating system, and works with Rockwell's Galaxy automatic call distributor (ACD) and any voice response unit. The product makes it possible to link an ACD

to as many as nine IBM or Tandem computers.

CGII includes several software modules, all of which run on the Tandem. The first is an ACD Manager that handles the ACD link and accepts automatic number identification and dialed number identification service information.

That data is then passed to the other modules, one of which is the Call Transfer Manager, which determines to which agent the call should be passed. Other modules
(continued on page 47)

Corrections: The editorial, "Shedding new light on the role of LANs in the enterprise" (NW, Feb. 10), listed an incorrect telephone number for information regarding Boston University's Downsizing/Rightsizing International Conference and Exposition, which is scheduled for April 27-31 in Los Angeles. The number is (508) 649-4200.

The article, "SMC executive details firm's network plans" (NW, Jan. 27), misspelled the name of Geof Karlin, Standard Microsystems Corp.'s vice-president of marketing.

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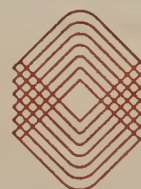
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IT'S ABOUT TIME.

AT&T, RBHCs try to sway Congress on telecom issues

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — At a contentious House subcommittee hearing last week on regulation of the telecommunications industry, AT&T chief Robert Allen urged passage of legislation banning the RBHCs from new markets, while the local carriers asked for Congress' blessing to take on AT&T on its own turf.

Allen, AT&T's chairman and chief executive officer, told the subcommittee that Congress should enact legislation banning the Bells from equipment manufacturing, the interexchange market and information services — areas prohibited under the original Modified Final Judgment. However, the RBHCs countered with a demand for Congress to lift the long-distance restriction imposed by the court in order to offer users more choice in the long-haul arena.

According to Allen, "The unpredictable and erratic behavior of the Department of Justice and the RBHCs' attempts to subvert the terms of the consent decree through backdoor waiver requests forced AT&T to ask for legislation that would cement the Modified Final Judgment restrictions into law."

The long-haul carrier last week joined a group of organizations in signing a Unity Statement urging Congress to pass legislation banning the RBHCs from new markets. Congress now appears ready to push aside the U.S. District Court's control over the consent decree and take charge of U.S. telecommunications regulation.

Interleaf unveils software

continued from page 2

ing, desktop publishing and computer-aided design packages and reformats them for on-line viewing. It compresses them by an average of 2-to-1, letting the user easily manipulate large files.

The product also provides for automatic indexing within documents and groups of documents. Thus, when a user clicks on a page number in the index, the software automatically calls up that page in the document.

The product also includes a hypertext feature that enables document creators to speed text searches by building icons into a document. When end users click on a customized icon, the software automatically calls up a portion of the document electronically linked to that icon.

Available in the second quarter, it costs \$10,000.

The WorldViewer portion is software that will initially be

"It's time for Congress to act," Rep. Mike Synar (D-Okla.) said last week. "If we do not act, I have grave reservations about the future of the industry."

Rep. Jack Brooks (D-Texas), chairman of the House Judiciary Committee, called the hearing to get industry views on whether to codify Modified Final Judgment regulations into law. He indicated that he will soon unveil a bill that includes a ban on information

"If we do not act, I have grave reservations about the future of the industry," Synar said.

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services for the RBHCs, a market the court recently allowed them to enter.

At the hearing representatives from the newspaper industry also accused the Bells of using their monopoly power to discriminate against them. But the RBHCs dismissed those claims, maintaining that media companies are worried the carriers will capture advertising revenues through on-line services such as electronic yellow pages.

David Easterly, president of Cox Newspapers, Inc., a subsidiary of Cox Enterprises, Inc., testified that Southern Bell Telephone and Telegraph Co. has refused to provide Cox Newspapers in Atlanta and West Palm

Beach, Fla., with a three-digit number for access to an information service, although the RBHCs can use the short code.

"While they want to use a three-digit number for information service, they want to leave us with a 1-900 number followed by six more digits — and would have you believe they support fair competition," he said.

However, a BellSouth Corp. spokesman later disputed Easterly's characterization, saying Southern Bell has planned a meeting with Cox Enterprises on March 2 to discuss this unprecedented demand.

Cathleen Black, president and CEO of the American Newspaper Publishers Association, urged Congress to adopt measures to keep the RBHCs out of information services until substantial competition exists in the local loop.

But Ivan Seidenberg, vice-president of Nynex Corp.'s telecommunications group, argued on behalf of the RBHCs that competition already exists in the local loop.

He added that the RBHCs should be allowed into the long-distance industry to give users greater choice in a market now dominated by only three large players. Seidenberg also urged Congress to lift the Modified Final Judgment manufacturing ban.

But the Bells' powerful lobbying campaign on Capitol Hill may have backfired in some quarters. A number of congressmen, including Reps. John Bryant (D-Texas) and John Conyers (D-Mich.), complained at the hearing that the Bells were using intense public relations and lobbying clout to intimidate congressmen.

"We're seeing an organized assault on the MFJ," Conyers said. ▀

per copy, or \$195 per site license.

Sprint International said WorldView gave it an easy way of incorporating more than 200 volumes of paper-based diagnostics manuals into an on-line help system for its new TP5800 net management system. The TP5800, which will be available in about a month, is a RISC-based workstation tool for monitoring X.25 and frame relay networks.

TP5800 provides network maps identifying all elements in a user's network. If there is a problem on the net, the map will light up the area needing attention, such as a frame relay switch.

When network operators click on the icon representing the switch, they are given the option of viewing a help screen. When this option is chosen, a link to WorldView is established. Using WorldView hypertext capabilities, the application quickly calls up the network documentation and diagnostic information pertaining to that switch. ▀

Vendor rift may delay DME

continued from page 1

The DME is intended to be a multivendor network and system management platform that runs vendor-specific applications written to common application program interfaces (API).

As was announced last September, the DME is to include both a traditional API, dubbed the Consolidated Management API (CM-API), and an object-oriented interface intended to help programmers more easily develop management applications.

CM-API, submitted by Groupe Bull SA, was the result of work done mainly by that company and Hewlett-Packard Co. It provides a consistent means for applications to use underlying management protocols.

The object-oriented API, submitted by Tivoli Systems, Inc. of Austin, Texas, uses a concept called methods, which involves software routines that define how to perform some function on an object, such as gathering performance statistics.

Although the OSF has not announced DME ship dates, industry observers said that if some code is not available by the end of the year or early next year, it will hurt the DME's chances for adoption by vendors interested in employing the technology.

Some vendors do not think OSF will meet that goal if it insists on including the object-oriented interface.

"I think they have two choices," said Jeff Thiemann, OpenView business development

manager at HP, which is also submitting DME technology. "One is to wait until all of it [is integrated and] can come out together, or make a decision to release it in two pieces," with the object-oriented interfaces coming later.

Todd Smith, chief scientist at Tivoli, said that, from his perspective, everything is proceeding well. "We don't see anything that's really a problem for us at all," he said.

But other vendors involved in the project are concerned that if OSF pushes too hard to get its object-oriented technology out the door, it may be incompatible with complementary work currently under way at other open systems industry consortia, such as the Object Management Group and X/Open Company, Ltd.

According to Smith, Tivoli is tracking that work closely. "We're trying to ensure that our own framework is compatible with developing standards in other areas and are helping influence the direction of those areas so there won't be a big divergence," he said.

Gossels said the OSF is also working closely with the consortia. Although he declined to say when it will be delivered, he said the object-oriented interface will be included in the first release.

At the very least, the controversy points to some division among vendors submitting DME technology. However, Gossels downplayed that aspect, saying OSF is used to working out problems among participating vendors, as it did with its Distributed Computing Environment integration effort. ▀

IBM adds data sharing options

continued from page 4

for greater efficiency.

Central Systems Administration Tools/400 is priced from \$9,330 to \$56,900, while Distributed Systems Administration Tools/400 is priced at \$1,250. Both will be available in July.

OS/400 Version 2, Release 2 now also supports X.25 packet switching over Integrated Services Digital Network B channels.

OS/400 Version 2, Release 2 is priced from \$1,800 to \$168,000, depending on the processor. It will be available in December.

PC/Support 400

IBM also said users can now order Wall Data, Inc.'s Rumba/400 product as an optional feature of PC Support/400 Version 2, Release 2. Rumba/400, previously available as a Programming Request for Price Quotation, is a Microsoft Corp. Windows-based 5250 terminal emulator that allows personal computer users to access AS/400 data and applications, and share data among PC applications.

Rumba/400 has a number of new features, including Windows-based AS/400 file transfer, and System/370 and System/390 file transfer via 3270 device emulation.

PC Support/400 also provides Windows dynamic link libraries application interfaces, allowing users to access AS/400 resources via Windows techniques.

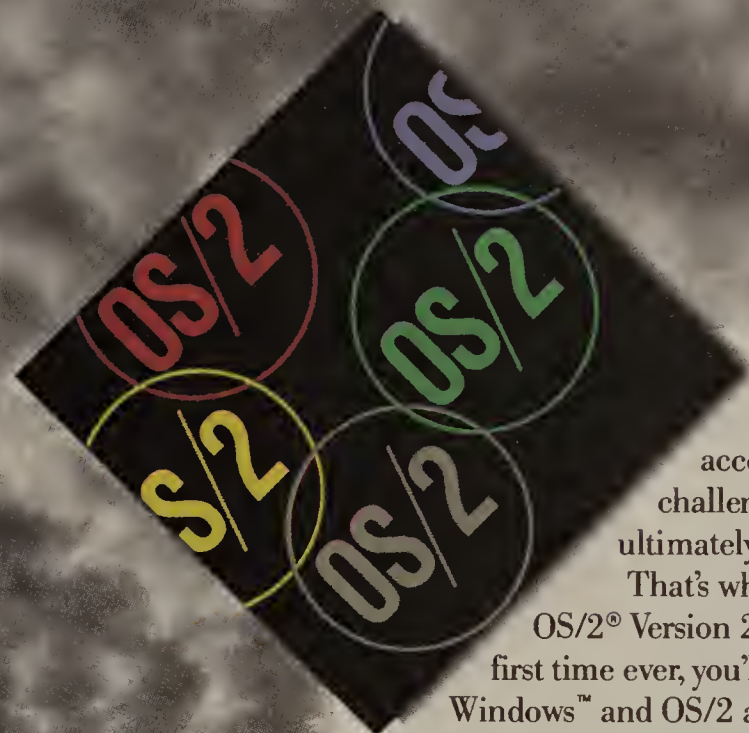
AS/400 Intelligent Printer Data Stream printers can also accept jobs from Windows clients.

PC Support/400 Version 2, Release 2 is priced from \$796 to \$27,200 for a basic onetime charge. Rumba/400 is priced at \$414. Both programs will be available in December.

IBM said AS/400-attached PCs can now use the Telnet terminal emulation protocol to link to a Digital Equipment Corp. VAX over a Transmission Control Protocol/Internet Protocol network and log on as a DEC VT-100 terminal.

The software, Telnet VT-100, is offered as an optional feature of TCP/IP for OS/400 and will be available in December. TCP/IP for OS/400 is priced from \$546 to \$13,320. ▀

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Users blast RBHC efforts

continued from page 1

"Pacific Telesis and the other [RBHCs] must come forward with full information . . . so that interested parties and the commission can determine what other unpleasant surprises may be in store," the Ad Hoc Telecommuni-

cations Users Committee stated.

If Pacific Telesis or Southwestern Bell is successful in slowing implementation of CCS7, such surprises could include delays in nationwide 800 number portability and the rollout of other services, such as Integrated Services Digital Network and long-distance caller identification.

CCS7 is a separate data net-

work that handles call setup and routing for the telephone network, and will support the database lookup capabilities needed for users to switch 800 numbers among carriers.

A delay in 800 number portability could prolong the FCC's ban on new AT&T Tariff 12 or contract deals containing 800 service or the ban on modifications to ex-

isting Tariff 12 deals with 800 service. That prohibition is scheduled to be lifted when 800 numbers become portable.

National Data Corp. (NDC), which has been active in the FCC's 800 portability proceeding, said it expects other carriers to follow Pacific Telesis' lead and the delays to escalate.

"... each new waiver request

would be measured against the last one granted, rather than against the standard adopted in [the FCC's CCS7 order]," NDC stated. The firm asked the FCC to require any carrier contemplating filing a waiver to do so now so the agency can consider all requests together.

The Ad Hoc Committee expressed similar concerns, saying, "The committee fears [that] the skimpiness of [Pacific Telesis'] waiver request will prove a harbinger of the carriers' approach to implementation [of CCS7]."

Pacific Telesis could not be reached for comment by press time.

Last September, the FCC issued an order requiring the RBHCs and GTE to conclude virtually all of their CCS7 installation by March 1993 — a date about two years earlier than previous FCC requirements. Without

Pacific Telesis' request could open the door for other RBHCs to wriggle out of commitments.

▲▲▲

CCS7, database lookups for portable 800 numbers could lead to post-dial delays four times as long as those today.

The FCC order requires the local carriers to be able to do database lookups with only a five-second call setup delay on 97% of their traffic by March 1993. By 1995, all of their traffic would be subject to a maximum delay of five seconds and an overall mean delay of 2.5 seconds.

Pacific Telesis is asking the FCC to relax these postdial delay times. The carrier is asking for a six-second postdial delay on 97% of traffic by 1993 and wants to continue a postdial delay of more than five seconds on 2% of its traffic through 1995.

Postdial delay is currently two or three seconds for calls. If the delay becomes too high, it not only costs users money, but can create problems for devices such as point-of-sale terminals that are programmed to disconnect if calls are not set up within a certain time frame.

"Number portability is important but so is service quality, and if the [FCC] permits waivers on the basis of [waiver requests] as insubstantial as [Pacific Telesis'], then the balance between these two goals will be no balance at all," the Ad Hoc Committee said.

"If the implementation plans [to be filed March 1] are as deficient as the [waiver] petition, the commission must move quickly and firmly to require the carriers to cure the deficiencies," the committee said. ■



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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

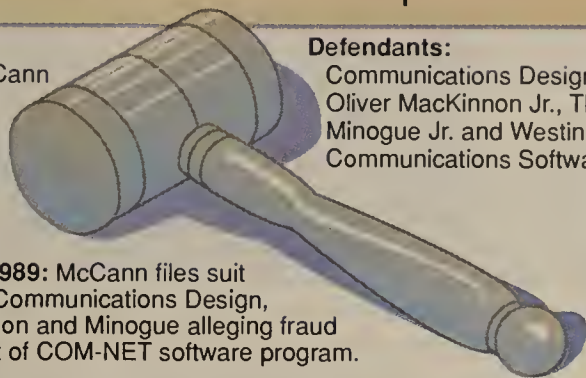
“We worked with 3Com [Corp.] when they were a competitor, but only under duress.”

Jim Bills
Executive vice-president of sales
Novell, Inc.
Commenting on the new comarketing relationship between the former rivals.

McCann lawsuit update

Plaintiff:
John McCann

Defendants:
Communications Design Corp.,
Oliver MacKinnon Jr., Thomas
Minogue Jr. and Westinghouse
Communications Software, Inc.



March 1989: McCann files suit against Communications Design, MacKinnon and Minogue alleging fraud and theft of COM-NET software program.

June 1989: Lawsuit is amended to include WCSI, which was created when Westinghouse Electric Corp. bought Communications Design in 1989. The case is scheduled to be heard this spring.

January 1992: Second lawsuit is filed against Westinghouse Electric, alleging that the company did not adequately investigate McCann's claims before buying Communications Design. McCann also alleges that Westinghouse Electric knowingly sold stolen software.

GRAPHIC BY SUSAN J. CHAMPENY

People & Positions

The Asset Group, a Houston-based coalition of resellers and network integrators, last week named **Steve Bush** as its first technical officer.

Bush is also a vice-president and chief technical officer at DataAids, a Houston-based network integrator as well as a founder of The Asset Group.

In his role as technical officer for The Asset Group, Bush will be responsible for articulating the coalition's future technical direction.

The senior technical officer at each member company will serve on The Asset Group's Emerging Technologies Committee. These representatives will communicate via a Lotus Development Corp. Notes system to coordinate technical research and evaluations.

BellSouth Enterprises, Inc. has announced that **Bill Williams** will become the company's executive director of information services effective March 1.

In the newly created position, Williams will coordinate the development and implementation of the company's information services-related activities.

BellSouth plans to launch several market trials of new information services in coming months, Williams said. Details were not available.

Previously, Williams was president of BellSouth Information Systems. He will be replaced by **Robert Haley**, a vice-president at BellSouth International. □

Plot thickens in case about allegedly stolen software

By Ellen Messmer
Washington Correspondent

NEW HAVEN, Conn. — A former executive of Westinghouse Communications Software, Inc. (WCSI) has stepped forward in an ongoing case concerning ownership rights of software marketed by the company, contending WCSI knew the products were stolen from a consultant.

Gregory Deringer, former WCSI vice-president of marketing and sales, told *Network World* “it was general knowledge” at WCSI that the company's TMS-I and CMS-I call accounting packages were based on COM-NET software developed by John McCann during a partnership he had in 1981 with Oliver MacKinnon Jr. and his company, Communications Design Corp.

McCann has alleged that MacKinnon defrauded him of his 35% ownership in Communications Design by telling him the software was scrapped but then secretly keeping it and later selling it to Westinghouse Electric Corp. as part of Communications Design's assets in 1989.

McCann, who filed a lawsuit against MacKinnon and Communications Design in 1989, filed a second lawsuit last month against parent company Westinghouse Electric. That suit, which seeks \$100 million in damages, alleges that Deringer's claims mean Westinghouse is guilty of larceny, not simply the inadvertent sale of stolen software.

Harlan Rosenzweig, president of Westinghouse Communications, Inc., blasting McCann's claims, said, “He just wants to dig into the deep pockets of Westinghouse [Electric].” Rosenzweig said Westinghouse Electric investigated McCann's complaints before buying the company and no

basis for McCann's claims was uncovered.

“We closed the deal in good faith,” Rosenzweig said. “Westinghouse [Electric] didn't steal anything from McCann.” He said MacKinnon agreed to set aside \$6 million out of the \$20 million he received for Communications Design as an indemnity in the lawsuit to protect WCSI. Rosenzweig added that no executive has ever brought accusations such as Deringer's to management.

Deringer's allegations bolster claims McCann made in the original lawsuit against MacKinnon that will go to trial this spring.

In that suit, McCann claims that MacKinnon defrauded him of 35% stock ownership rights in Communications Design he was to receive in exchange for delivering COM-NET. MacKinnon said McCann was fired for incompetence a few weeks after he joined the company and the software was scrapped. In 1989, MacKinnon sold Communications Design to Westinghouse Electric for \$20 million, plus up to \$45 million based on future profits.

McCann claims the WCSI programs TMS-II, CMS-I and CMS-II are derived from COM-NET, a claim bolstered by Deringer.

Deringer, now vice-president of sales at Mt. Laurel, Md.-based Boole & Babbage Network Systems, Inc., said in a signed affidavit that two WCSI employees who worked at Communications Design told him it was “amusing” that MacKinnon had been able to trick McCann out of his work and sell it to Westinghouse Electric.

Deringer said most WCSI staff considered the programs to be based on software stolen from McCann, but everyone assumed the statute of limitations would protect WCSI from liability. □

Three net start-ups vie for users' nets

Focus is on client/server-based applications, enterprise data access, wireless LAN technology.

This is the second of a two-part series.

Last week, *Network World* highlighted five start-up companies singled out by industry consultants and venture capitalists as some of the industry's newcomers most likely to have an impact on user networks.

The final installment of this series focuses on three more companies — one positioned to provide software tools for the development of client/server-based transaction processing applications, a second which has unveiled a new application specializing in data access across an enterprise, and a third with a novel approach to the wireless local-area network market.

Cooperative Solutions

Former employees of Tandem Computers, Inc. founded Cooperative Solutions, Inc. in order to address the demand for software development tools to assist users in creating client/server-based transaction processing applications.

The San Jose, Calif.-based company released its first two products, the Ellipse Development Environment (DE) and Ellipse Production System (PS), last September.

Together, Ellipse/DE and Ellipse/PS give software developers a rules-based tool set to be used in downsizing transaction processing applications from a mainframe environment to run on Microsoft Corp. Windows client workstations and OS/2 LAN Manager-based servers in a local area network.

Ellipse/PS allows users to develop applications where trans-

COOPERATIVE SOLUTIONS
Based: San Jose, Calif.
Founded: 1989
Primary business: Software tools for client/server-based on-line transaction processing

action processing is split between the requesting device and one or more servers on the LAN. The module provides distributed transaction management, session management and service-request management capabilities that can be built into applications.

Ellipse/DE provides developers with tools to perform object-oriented programming so they can define applications objects
(continued on page 10)

INDUSTRY BRIEFS

Merrill Lynch sells Teleport stake. Merrill Lynch & Company, Inc. last week agreed to sell 49.9% of Teleport Communications Group to Tele-Communications, Inc. Merrill Lynch noted that it plans to sell an additional 37.6% share to Tele-Communications in the event Cox Enterprises, Inc. does not exercise an option to buy the stock as agreed last December when that company bought a 12.5% interest in Teleport.

Banyan, Microsoft team on support. Banyan Systems, Inc. and Microsoft Corp. last week announced an agreement to resolve technical support conflicts for customers who use both vendors' products. Under the pact, both firms will act as the single point of contact to resolve support problems brought to their attention by customers. The agreement also calls for Banyan and Microsoft to provide each other with technical training and share technical information databases.

BellSouth, Racal-Datcom ink equipment deal. BellSouth Corp. and Racal-Datcom, Inc. last week announced a comarketing agreement under which BellSouth will market its network services in conjunction with Racal-Datcom's line of T-1 multiplexers, as well as network management and other data communications products and services. □

Net start-ups vie for users' nets

continued from page 9

once and reuse them later in developing other applications.

"Splitting up the processing functions between the server and the workstation is not easily done," said Andrew Mahon, research analyst at Southport, Conn.-based New Sciences Associates, Inc.

He pointed out that Ellipse is particularly useful for large corporations building new order-entry systems.

"Ellipse tries to reduce network traffic. That's the biggest drag on the performance of an application," Mahon said.

— Ellen Messmer

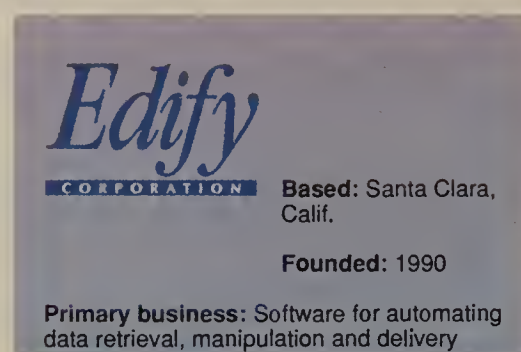
Edify

Start-up Edify Corp. made its debut this month with the introduction of what analysts say is among the first in a new class of applications designed to automate the retrieval and delivery of information over a network.

The Edify Information Agent is personal computer-based software that draws upon a variety of network technologies in order to satisfy user queries for data that is scattered across multiple systems ("Edify system to automate info delivery," *NW*, Feb. 3).

Since the Information Agent will automate tasks that had previously been done by a clerk or customer service agent, the company believes its new product will en-

able corporations to reduce the labor cost of delivering information in sales, services and support organizations.



Jeffrey Crowe, president of Edify, located in Santa Clara, Calif., said the company's mission is to integrate data communi-

cations, voice processing, database and object-oriented technology into a single system capable of automatically retrieving data for users.

Analysts expressed enthusiasm about Edify's product and strategy.

"I believe they have something that no one else is doing, especially in the way they have incorporated voice, telephony and fax capabilities instead of just relying on electronic mail," said Peter Kastner, a vice-president at Aberdeen Group, Inc., a consulting firm in Boston.

— Tim O'Brien

Windata

Officials at Windata, Inc., a wireless local-area network start-up, have no illusions about replacing the huge installed base of wire-based LANs with their company's offerings.

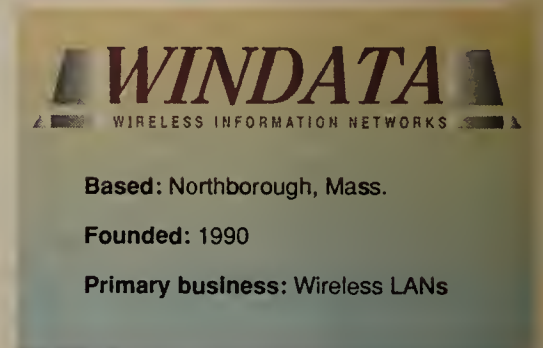
"If you came to me with a new building, I would tell you to put in the highest quality structured wiring system you could," said Greg Hopkins, chairman, chief executive officer and founder of the Northborough, Mass., company. "But if you visit that facility five years from now, you will see that structured wiring system augmented with wireless capabilities."

Windata, which will unveil its products sometime during the next five months, is hoping to get in early on a market set to soar.

The wireless LAN market is expected to grow from almost nothing today to a \$500 million market by 1994, according to International Data Corp., a Framingham, Mass.-based market research firm. So far, established computer and network equipment vendors, such as Motorola, Inc. and NCR Corp., have made the most noise in this emerging area.

Windata plans to employ a star-based network architecture in which users radio data to a central hub that acts as a switch to pass it to other users on a LAN. Users will be able to tie hubs to one another as well as to wire-based nets.

The company will provide transceivers that fit onto any standard network interface card on a PC or workstation. In addition,



tion, it will attempt to differentiate itself from competitors by providing products that support the Ethernet and token-ring standards, and by using spread-spectrum radio frequency digital communications. Spread spectrum is a technology that can penetrate most solid objects found in buildings and does not require a Federal Communications Commission operating license.

Don Gooding, a research partner at Accel Partners, a venture capital firm in Princeton, N.J., that is among Windata's investors, said the start-up's products will address a potentially huge market.

"As the portable computer market — laptops and palmtops — takes off, Windata's products will be there to provide instant wireless connectivity in office environments," he said. □

— Bob Brown

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Worth Noting

The regional Bell holding companies' total installed base of Switched Multimegabit Data Service links will climb from 2,000 at year end to just under 10,000 in 1995, according to a recent report by Transformation, Inc., a Tulsa, Okla., research firm.

Carrier Watch

Southern New England Telephone Co. (SNET) recently asked the Connecticut Department of Public Utility Control for permission to offer seven custom local-area signaling services.

Caller ID displays the calling party's number on a customer-supplied or rented display device or on a phone's LCD. Call Again redials the last number dialed, and Missed Call Dialing calls back the last party that attempted to call.

Call Blocking lets a person program a phone to reject calls from as many as six numbers, while Priority Call Ringing provides distinctive rings from preset numbers.

Priority Call Forwarding allows the customer to select calls from preset numbers to be forwarded to another location. Call Tracing will permit customers to initiate a trace of a call, with the caller's number retained by SNET.

If approved, SNET will begin introduction of the offerings later this year.

Rochester Telephone Corp. last week announced it has reached an agreement to purchase Statesboro Telephone Co. of Statesboro, Ga., which would be the 38th U.S. telephone company acquired by Rochester Tel.

According to terms of the agreement, Rochester Tel will exchange shares of its common stock for all Statesboro outstanding stock. No purchase price was disclosed. **■**

How the BOCs' central offices shape up

Year	1989	1990	1991	1992	1993	1994
Total central offices	9,389	9,406	9,393	9,373	9,375	9,366
Signaling System 7-compatible						
• Number	950	2,083	3,087	4,101	4,895	5,362
• Percentage	10.1%	22.1%	32.9%	43.8%	52.2%	57.2%
ISDN-compatible						
• Number	179	426	1,595	1,764	1,962	2,269
• Percentage	1.9%	4.5%	17.0%	18.8%	20.9%	24.2%

Some figures are based on estimates.

GRAPHIC BY TERRI MITCHELL

SOURCE: U.S. DEPARTMENT OF COMMERCE, WASHINGTON, D.C.

FCC to revamp beleaguered complaint-handling process

Agency will change procedures, reallocate staff.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Admitting the the Federal Communications Commission has a poor record of handling complaints, the chairman of the commission earlier this month realigned personnel and procedures to improve the process.

"This [complaint processing] is an area where occasionally there have not been timely decisions from the FCC," said Chairman Alfred Sikes at a recent agency meeting. "Nothing frustrates me more than for people to feel like they're not getting timely decisions [on complaints] from the FCC," he said.

At the meeting, the FCC commissioners voted unanimously to make improvements to change the complaint-handling process, ranging from shortening filing times to consolidating procedures for collecting evidence from parties involved in disputes.

They also voted to delay deliberations on damages until a wrongdoing has been proven — a change the FCC expects will cut down on time now spent wrangling over dollars before a case is decided.

The commission has come under increasing criticism and pressure to reform its complaint-handling process from users, carriers and Congress. These parties claim that the FCC has serious problems in this area, ranging from excessively slow processing to selective treatment of some groups.

Complaints pile up

The FCC currently has a backlog of 977 complaints, some of which have been pending for years. And the problem is expected to get worse. According to the FCC figures listed in the commission's 1992 budget report to Con-

gress, there were 766 formal complaint cases pending at the agency at the end of 1990, but the FCC had expected the backlog of cases to rise to 1,021 by the end of last year.

As carriers are incrementally deregulated and FCC resources dwindle due to budget increases that have not kept pace with inflation, Sikes has pointed to the complaint process as a means of ensuring fairness on a number of major proceedings, including price cap regulation, Open Network Architecture and Tariff 12.

Watchdog carriers

Sikes claims that even if the FCC lacks the resources to catch every violation, a "private police force" comprising rival carriers and users will bring problems to his attention through the complaint procedure.

However, critics say the process has so many problems of its own that it will take a major effort just to straighten it out, much less make it an effective policing tool.

One of the most vocal critics of the FCC is Allnet Communications Services, Inc., a long-distance carrier. Last year, Allnet released a scathing study of the FCC's handling of complaints based on records from the agency's Enforcement Division. It focused on formal complaints filed from October 1984 to June 1991.

Allnet concluded that the agency had resolved only 11% of the complaints filed during that period. Another 35% were resolved by the parties themselves through private settlements, and 54% of the cases were still pending.

Although many people have been unwilling to join Allnet in publicly criticizing the FCC for fear it could affect their pending complaints, the International

(continued on page 24)

AT&T equips PBXs against hacker fraud

Carrier offers feature for new Generic 3 that alerts network managers to unauthorized call attempts.

By Bob Wallace
Senior Editor

BRIDGEWATER, N.J. — AT&T has equipped its recently announced Definity Generic 3 private branch exchange with a feature that notifies net managers when hackers are trying to break into the switch.

The feature is designed to keep hackers from using the Generic 3's direct-inward system access (DISA) port to place unauthorized calls and the PBX's administration port to take over the switch.

The feature automatically rings the net manager's extension when hackers are trying to break into the system. It provides more immediate notification of problems than reviewing the reports and data provided by AT&T's older switches.

"Many customers complained that the reports only told them how many invalid [login] attempts had been made," said Kevin Hanley, a systems management marketing manager at

AT&T. "But that didn't tell them what the problem was."

Tough on hackers

The feature is supported by the Generic 3's common operating software and can make life tough for hackers when used in conjunction with access codes that limit use of the DISA and administration ports.

If a caller fails to enter the proper access codes, the Generic 3 dials a preselected extension and displays a warning message on the phone's LCD. The extension can be located at a security desk adjacent to the system administration terminal or in the network manager's office.

Once alerted, the network manager can change one or more of the access codes, add another level of codes or shut down the DISA port.

In the past, AT&T PBX users had only one way of knowing when someone was trying to break into their PBX — scrutinize

(continued on page 24)

WASHINGTON UPDATE

BY ANITA TAFF

FCC rejects AT&T request to dump Option 58.

The Federal Communications Commission recently rejected AT&T's emergency request to discontinue Option 58 of Tariff 12. The carrier said it needed to stop sales in order to avoid losing money next year when new FCC rules take effect that would allow customers to cancel the option without penalty. Option 58, originally designed for PepsiCo, Inc., was structured so that AT&T would lose money in the first year but make a profit during the second and third years. However, the FCC issued new rules last year that will allow all Tariff 12 customers to abandon their deals without penalty in March 1993 when 800 numbers become portable.

Although the FCC did not say why it rejected AT&T's request, it may have been due in part to vocal efforts by a number of resellers that claim AT&T wants to dump Option 58 in order to prevent them from buying the service. Several also claim they have been waiting for service from AT&T for months but the carrier refuses to give them contracts for the deal. AT&T strongly denies the allegations. The carrier now will likely reapply to the FCC to discontinue Option 58 but will not ask for emergency treatment this time.

Future looks bright for PCS. Federal Communications Commission Chairman Alfred Sikes indicated that the agency is moving full-steam ahead with personal communications services (PCS), despite protests from microwave users that will have to give up use of specific radio frequencies to make way for these new PCS wireless offerings. Speaking at the

(continued on page 24)

Datacomm Commentary

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

The worldwide market for on-line transaction terminals, such as point-of-sale terminals, will grow from \$47.4 billion in 1991 to an estimated \$66.9 billion in 1997, according to a study by Market Intelligence Research Corp. of Mountain View, Calif.

Data Packets

Eicon Technology Corp. of Montreal last week announced Access for OS/2, a new OS/2 version of its existing Access for Windows, the company's IBM 3270 terminal emulation software for Microsoft Corp. Windows-based personal computers.

Access for OS/2 supports the same features as Access for Windows, including support for 32 simultaneous display or printer sessions between a stand-alone or local-area network-attached workstation and multiple hosts.

Eicon also announced Access for Windows 3.11, an enhanced version of its Windows-based 3270 emulation package. The product adds features such as the ability to select text or bitmap data from host sessions to workstation-based applications.

A keyboard's numeric keypad can now be mapped with 3270 functions or Access for Windows macros. The product's macro facility automatically stores a sequence of commands and keystrokes, enabling it to be triggered later with a single keystroke.

Another addition is support for the Windows Dynamic Data Exchange feature under printer sessions. The same features are included in the Access for OS/2 product.

Both products are available now and cost \$395 per user. A 10-user package is available for \$3,000, and a 25-user package costs \$5,000.

(continued on page 15)

Software provides disaster relief on transaction nets

Lets Stratus computers mirror activity on net.

By Paul Desmond
Senior Editor

LAMBERTVILLE, N.J. — Systems Design Associates, Inc. last week announced new disaster protection software that allows users to back up transactions to multiple Stratus Computer, Inc. fault-tolerant computers across a company network.

Intended for transaction processing-intensive applications, such as retail order entry and financial systems, Systems Design Associate's new DataSafe software enables users to mirror transactions across multiple Stratus XA 2000 and XA/R Continuous Processing Systems.

If a Stratus system fails or is knocked off-line due to a disaster, other Stratus systems on the net can pick up the load with no user downtime or loss of data.

Peter Fiore, industry marketing manager for emerging mar-

kets at Stratus in Marlborough, Mass., said users purchase Stratus equipment to avoid downtime. "[DataSafe] provides an extra level of protection," he added.

DataSafe runs on a Stratus computer, under the Stratus VOS operating system, along with the transaction processing applications it is backing up. Multiple networked Stratus systems can run the software, allowing each to be a hot backup to the others.

Derek Fields, vice-president of product research at Systems Design Associates, said users can configure DataSafe to back up only certain applications or types of transactions. DataSafe watches applicable target files for new transactions and mirrors those transactions on one or more backup systems.

The next release of DataSafe will include a transaction protec-

(continued on page 15)

DEC offers new spin on video nets

By Jim Duffy
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. recently unveiled software that enables LAN-based workstation users to establish on-screen videoconferencing sessions with other local or remote users.

The company's DECspin software allows as many as six users to hold meetings in real time without transporting personnel from one company site to another. In addition, users can set up videoconferencing sessions over an existing private net, rather than using costly carrier services.

DECspin runs on DECstation 5000 and Personal DECstation 5000 Ultrix/RISC workstations attached to local or remote Ethernet or Fiber Distributed Data Interface local-area networks running the Transmission Control Protocol/Internet Protocol.

The software enables users to receive and transmit video, audio and data and presents it in a workstation window in a color or monochrome format.

The software runs in tandem with several add-in boards that allow the workstations to function as videoconferencing units.

One of the add-in boards is DECmedia, which fits into a DECstation's TURBOchannel slot and connects video cameras and microphones to the workstations.

DECspin also works with a DECvideo/PIP card, which captures video information from the camera, digitizes it and stores it in a TX frame buffer memory board. A DECaudio card captures voice information and provides telephone quality audio to DECspin users.

To send data to remote users, DECspin passes videoconferencing traffic to a DECnet router, which sends the data over a private T-1 or T-3 line.

Jack Toto, DEC's multimedia marketing manager, said DEC is investigating development of a board for the workstations that will connect them directly to a T-1 pipe and bypass a router.

Workstations running DECspin must support the Open Software Foundation, Inc.'s OSF/Motif graphical interface as well as provide a LAN connection.

DECspin adheres to DEC's Network Application Support (NAS) architecture and incorporates NAS's Compound Document Architecture and Applications Control Architecture components, which provide for the representation and interchange of multimedia documents as well as the linking of multimedia applications.

DECspin is priced starting at \$2,995 per workstation and is available now. ■

History of Agriculture Dept.'s National Finance Center

1973	U.S. Department of Agriculture establishes the National Finance Center in New Orleans to maintain a personnel database and process payroll data.
1983	Center receives authorization to process administrative data for other federal agencies and enters into a 10-year contract for a custom packet network called DepNet.
1988	FTS 2000 long-distance contract is awarded in December. Agriculture Department plans for transition to AT&T portion of FTS 2000.
1991	Treasury and Justice department personnel begin to be added to center's accounting system.
1992	In February, transition of DepNet to FTS 2000 is largely completed; DepNet contract to expire in September. Test of net disaster recovery capability is planned for March. Center's work load will grow to include payroll processing for 400,000 government personnel from 60 agencies.

DepNet = Departmental Network
FTS = Federal Telecommunications System

GRAPHIC BY SUSAN J. CHAMPENY

Fed agency to deploy new FTS 2000 plan

Dual homing promises National Finance Center redundancy at low cost when it cuts over to net.

By Ellen Messmer
Washington Correspondent

NEW ORLEANS — The National Finance Center, a key federal government data processing center, will cut over to the AT&T portion of Federal Telecommunications System (FTS) 2000 this week under a unique plan that will give the center network redundancy at a low cost.

Under a dual-homing arrangement, AT&T will route packet-switched traffic through two nodes — one in Atlanta and the other in Houston — to the processing center here. The plan, which eliminates a single point of failure, marks the first time dual homing has been implemented for an AT&T FTS 2000 customer.

The National Finance Center, part of the Department of Agriculture, provides payroll processing for 400,000 government employees in 60 agencies, including the Department of Commerce. It also provides other services, such as employee savings plan administration, as well as travel and property management.

Every day, dozens of federal agencies with hundreds of offices across the country transmit data over 56K bit/sec X.25 or dial-up transmission facilities into the center's two IBM mainframes.

For a decade, the center has relied on a private analog packet network, dubbed the Departmental Network (DepNet), that was built by Telenet Communications Corp., now known as Sprint Data Group.

Three years ago, the Agriculture Department began planning the transition from DepNet to

AT&T's FTS 2000 net in order to comply with the government's mandatory use requirement.

Huey Faciane, FTS 2000 coordinator at the Agriculture Department, said government planners told AT&T they wanted to take one of DepNet's best features — its dual-homing capability — and implement it in FTS 2000. AT&T complied, at no extra cost to the department.

In order to provide dual homing for the center, AT&T modified its nine FTS 2000 packet switches throughout the country to identify packets addressed for the National Finance Center and to direct them, according to application, to AT&T service nodes in Atlanta and Houston.

"Half the agencies transmitting to the center will call through Houston and the rest of the agencies through Atlanta," said Richard Danner, AT&T's technical specialist for FTS 2000.

If an outage occurs, AT&T can shift the Atlanta traffic to Houston, or vice versa, from its Vienna, Va.-based network management center.

Data center outage

If the National Finance Center's processing facility goes down, FTS 2000 can also be used to route traffic to a SunGard Recovery Services, Inc. hot site in Philadelphia by rerouting the Atlanta and Houston traffic to an FTS 2000 service node in New York.

A dedicated T-1 line between New York and Philadelphia will then be used to deliver the data to (continued on page 15)

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Fed agency to deploy new FTS 2000 plan

continued from page 13

the hot site. Danner said the last phase of implementing the dual-homing plan, to occur this month, will require agencies with Unix-based machines using the remote job entry protocol script to change the script files and packet assembler/disassemblers to a special network terminal number for the center.

According to Faciane, AT&T and the Agriculture Department will coordinate a national test of the dual-homing system in mid-March. He expressed hope that the center's new contingency backup operation will set a precedent that could make

dual homing a generally available feature of FTS 2000.

But according to Danner, the dual-homing arrangement is not likely to become a standard offering under FTS 2000 any time soon.

The size and scope of the National Finance Center's operations were the main factors that spurred AT&T to implement the plan, he said.

Dual homing may remain an option only for the largest government users. US Sprint Communications Co., which holds half of the FTS 2000 contract, said it implemented a dual-homing scheme a year ago for the Department of Justice's Immigration and Naturalization Service, US Sprint's biggest FTS 2000 packet user. **■**

Data Packets

continued from page 13

Hewlett-Packard Co. recently announced it bested bids from three other companies — Digital Equipment Corp., NCR Corp. and Sun Microsystems, Inc. — for a \$37.5 million contract to implement a worldwide computing network for Australia's Department of Foreign Affairs and Trade (DFAT).

The Australian Diplomatic Communications Network (ADCNET) will be a client/server configuration using HP's Reduced Instruction Set Computer-based 9000 Series 800 servers running the HP-UX BLS operating system, HP700/RX color X stations and peripherals.

HP's solution includes such items as text storage and retrieval software, office automation applications and relational databases.

ADCNET will be used to transmit non-classified and top secret information to its 96 worldwide locations.

In addition, the network will replace DFAT's central message handling and distribution system.

DFAT handles all formal communications between federal government agencies in Canberra, Australia, and overseas agencies.

The network will be installed in Canberra, London, Washington, D.C. and at 96 overseas DFAT posts during the next five years. **■**

Software provides disaster relief

continued from page 13

tion feature that employs a two-phase commit protocol to ensure that the original transaction is completed before it is mirrored on the backup devices.

Because DataSafe works in real time, it is different from services offered by disaster recovery companies. Such firms periodically back up entire files or databases, but, in the event of a failure, it may take hours to get up and running on the remote backup machine.

With DataSafe, users do not have to spend money on machines that are only used in the event of a disaster because the software lets multiple production computers back up one another.

“There have been enough disturbing outages lately that have given fits and pause to IS planners,” Kastner said.

▲▲▲

DataSafe can also reduce wide-area network traffic by allowing records to be stored and updated locally, with only changed data being sent over the WAN.

DataSafe requires overhead ranging from about 1.5% of CPU power on high-end Stratus machines to 7% on low-end machines, Fields said.

Initially, the software will work only over X.25 WAN links, although support for the Transmission Control Protocol/Internet Protocol is due in the third quarter.

“Clearly, there is a need for this sort of capability because mission-critical applications, by definition, can't fail,” said Peter Kastner, a vice-president at the Boston consultancy Aberdeen Group, Inc. “There have been enough disturbing outages lately that are totally beyond the control of the computing site that have given fits and pause to IS planners.”

DataSafe Release 1.0, available now, supports applications running under Stratus' VOS operating system. Release 2.0, due out next quarter, will add support for transaction protection. Release 3.0, due in the fourth quarter, will support operating systems based on Unix System V Release 4, including Stratus' FTX.

Pricing for DataSafe starts at \$70,000 for a two-system configuration. **■**

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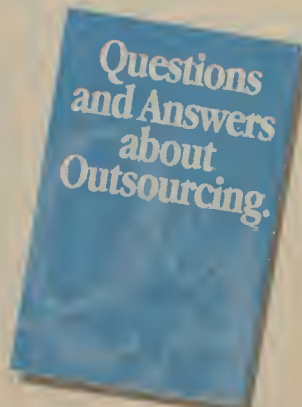
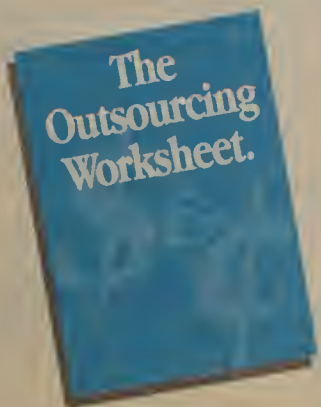
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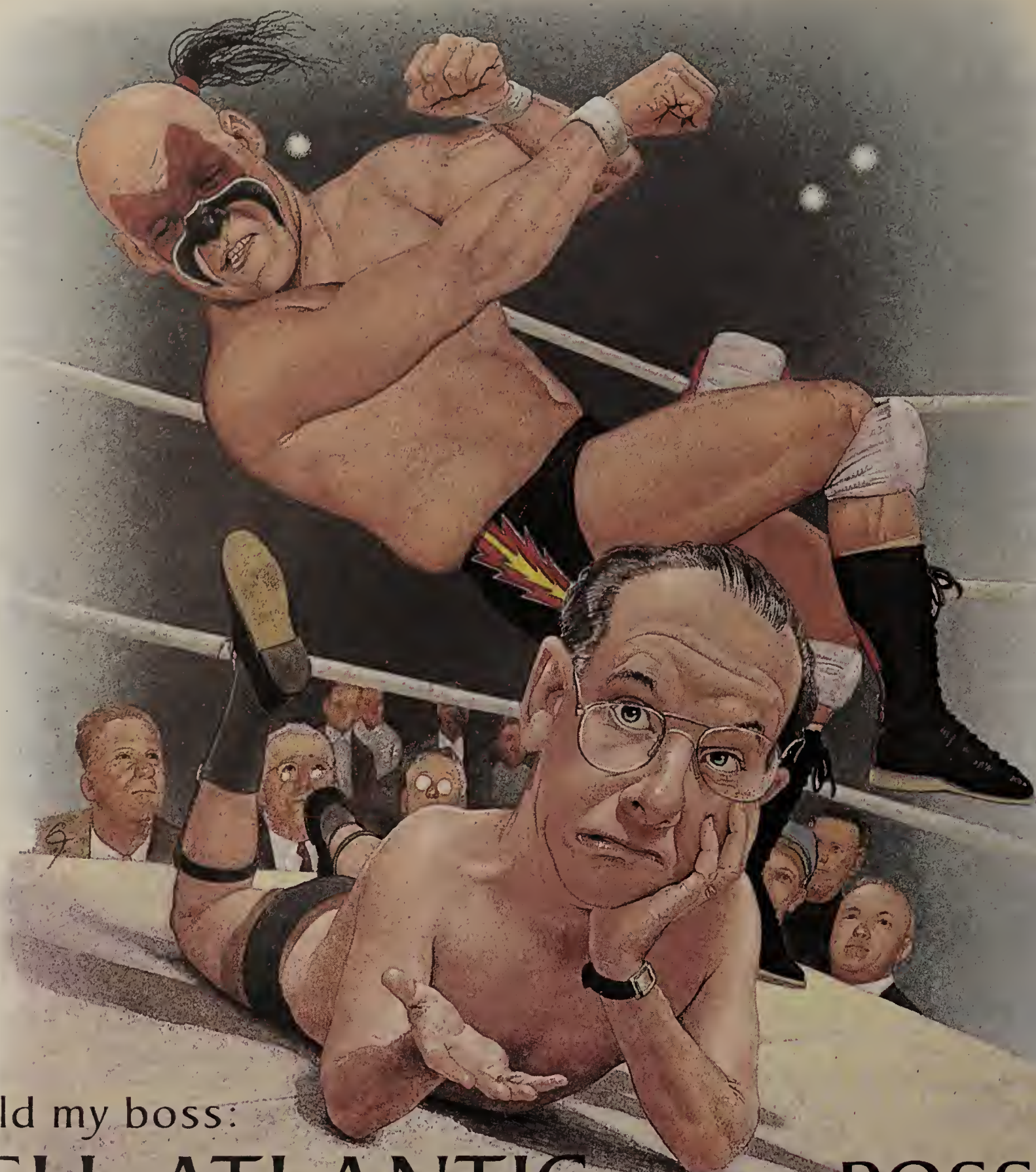
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LOCAL NETWORKING

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Worth Noting

“**W**hat will networks look like in 1996? Networks will be more unpredictable, unmanageable and complex.”

Howard Anderson
Managing director
The Yankee Group
Boston

etnotes

The **Technical Support Alliance (TSA)** has added six more vendor companies to its ranks. The TSA, which is celebrating its first anniversary this month, is a vendor organization founded by Novell, Inc. committed to reducing the amount of calls users need to make to resolve problems in multivendor networks.

Members of the alliance participate in training and exchange technology so users can call one member requesting aid in solving a network problem that may involve products from another. The new TSA members, Advanced Logic Research, AT&T/NCR Corp., Da Vinci Systems Corp., Shiva Corp., Thomas-Conrad Corp. and Wall Data, Inc., bring the total number of members to 31.

Enable Software, Inc. recently introduced **Enable Office**, a software package for networked personal computers that combines various applications to provide an integrated office system for small to midsize networks.

In addition to more traditional office-based applications, such as word processing and spreadsheets, the package includes an electronic mail program and relational database, communications and program-customization tools. Advantages include a common user interface for all applications and simpler program management.

Enable Office is in beta testing and will be available this spring for \$995 for a four-user office pack.

(continued on page 18)

Novell adds Apple DAL support to NetWare SQL

Macintosh, DOS and OS/2 clients share database.

By Caryn Gillooly
Senior Editor

BOSTON — Novell, Inc. has unveiled the latest version of its NetWare SQL relational database product that now supports Apple Computer, Inc.'s Data Access Language (DAL) in addition to offering other enhancements.

With the newly added DAL support, NetWare SQL Version 3.0 lets Macintosh clients, as well as DOS and OS/2 clients, share a common Novell Btrieve database on a NetWare 3.11 local-area network.

Other enhancements include referential integrity, on-line backup, named database support and enhanced performance.

“With this new release, the primary enhancement is the DAL support,” said Robert Shoop, director of product marketing at Novell's database products division in Austin, Texas. “The support basically lets another platform run at the client level” and access the Btrieve database through the NetWare 3.11 server. Before this release, NetWare SQL

only supported DOS, Microsoft Corp. Windows and OS/2 clients.

In addition to providing access to Btrieve-based data, the new release will enable Macintosh clients to integrate that data into DAL-compliant applications, such as Microsoft's Excel and Lotus Development Corp.'s 1-2-3 spreadsheets, and application development tools, such as 4th Dimension and HyperCard.

“Our executives want a project management system that is accessible from both Macintosh and Windows workstations,” said Larry Winn, applications development manager at Georgia Power Co., a NetWare 3.11 user in Atlanta. “The other solutions we've looked at required either purchasing software or protocol drivers for some or all of the workstations involved. We want [a single product] that contains all the components we need.”

High on the list of additional enhancements is that NetWare SQL 3.0 specifies that referential integrity be done by Btrieve as

(continued on page 18)

Sitka tool links pen-based computers to existing LANs

By Timothy O'Brien
West Coast Bureau Chief

ALAMEDA, Calif. — Sitka Corp., a subsidiary of Sun Microsystems, Inc., recently announced a peer-to-peer network product that can be used to link multiple pen-based computers to an existing local-area network.

The software product, called **PenCentral**, runs on a LAN-attached personal computer configured as a docking station for pen-based computers, which are sometimes called tablets due to their portability. Pen-based computers are gaining popularity among field personnel who want the option of using a pen-like data input device.

In addition to PenCentral, Sitka announced the availability of **PenTOPS**, its client software co-developed with GO Corp. and bundled with GO's PenPoint OS, an operating system that allows peer-to-peer file and print sharing among pen-based computers, Apple Computer, Inc. Macintoshes, Sun workstations and DOS-based PCs.

“Our game is simply cross-platform peer-to-peer network-

ing,” said Deborah Triant, chief executive officer at Sitka. “Now we can link pen computers to any other mobile or desk-bound system.”

As part of the announcement last week, Sitka said IBM will li-

“**O**ur game is simply cross-platform peer-to-peer networking,” Triant said.

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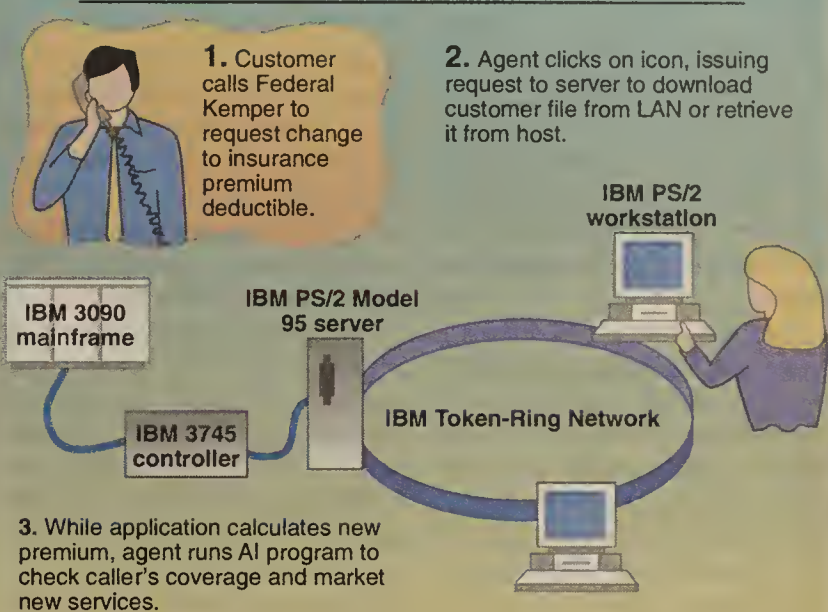
cense PenCentral in future plans not yet disclosed.

The software, which runs on DOS-based PCs, allows as many as 32 users of pen-based computers running PenTOPS to connect asynchronously to any mix of parallel, serial or modem ports on the docking station.

Once connected, users can transfer files to net nodes, access

(continued on page 19)

OS/2 multitasking gives user edge



GRAPHIC BY SUSAN SLATER

SOURCE: FEDERAL KEMPER INSURANCE CO., DECATUR, ILL.

Firm tags new OS/2 to figure premiums

Federal Kemper builds client/server application to improve service and reduce costs via multitasking.

By Joanne Cummings
Staff Writer

DECATUR, Ill. — Federal Kemper Insurance Co., a beta user of IBM's OS/2 Version 2.0, is building a client/server application that takes advantage of the operating system's advanced features to improve customer service and reduce company expenses.

Initially, the application will enable clerks to use OS/2 multitasking to calculate insurance premium adjustments locally on the fly while simultaneously checking gaps in customers' policy coverage so that those services can be offered.

By moving the insurance premium calculation from a batch-oriented mainframe operation to local workstations, Federal Kemper hopes to reduce data processing costs by nearly 20%.

“We perceived that OS/2 is ahead of all the other PC operating systems in the marketplace,” said Keith Sievers, vice-president of information processing and treasurer at Federal Kemper, based here.

“Take [Microsoft Corp.'s] Windows, for example,” he added. “It's still DOS-based, and we needed more processing power and speed than it offers. We didn't want to run into Windows' memory or file-size limitations. For the money, OS/2 is just a more powerful operating system than anything out there today.”

Because the commercial release of Version 2.0 is due out in March, Federal Kemper has yet to run the new application in a pro-

duction environment, primarily because there are still a few minor bugs in the operating system that need to be worked out, Sievers said.

Currently, Federal Kemper is testing the application on about 20 nodes on an IBM Token-Ring local-area network running IBM's LAN Server on IBM Personal System/2 Model 95s positioned as file servers. The LAN is linked via an IBM 3745 to an IBM 3090 mainframe in the same campus running IBM's DB2 database management system, which contains the company's customer information.

When the application is fully operational — within the next 12 to 15 months — Sievers said it will be running on as many as 125 OS/2 workstations throughout the company.

The application

The company's customer service agents handle a large number of calls from field agents and customers about changing the deductible on insurance policies, Sievers said.

When a customer requests such a change, the client portion of the application will kick off a request to the server, asking for a customer's file. The server then either retrieves the file if it is stored on the LAN or establishes a session with the 3090 to download the customer data to the agent.

The customer service representative can then change the deductible. The application, run-

(continued on page 19)

MHS earning new respect in the Mac E-mail world

Vendors to roll out MHS-based mail products.

By Margie Wylie
Senior Editor

BOSTON — Ask an Apple Computer, Inc. Macintosh user what Novell, Inc.'s Message Handling Service (MHS) is and you will likely get a blank stare in response.

According to Novell, although its messaging engine standard has captured the imagination and market share of about 65% of the IBM Personal Computer and compatible market, the only Macintosh package that ever used the X.400 predecessor died nearly two years ago.

With the changing nature of electronic mail, however, that trend is reversing and MHS is starting to make inroads to the Macintosh market as well as across the chasm that too often muddles communications between Macintosh users and their PC counterparts.

At NetWorld 92 Boston earlier this month, West Des Moines, Iowa-based CE Software, Inc.,

maker of the Macintosh E-mail market leader QuickMail, and Da Vinci Systems Corp., a popular start-up in the PC market and maker of Da Vinci eMail, said they will both ship new Macintosh E-mail packages based on MHS, likely sometime this year.

Both CE Software and Da Vinci officials said their efforts were spurred primarily by demand from users that said existing gateways between Macintoshes and MHS-based systems are not reliable, flexible or fast enough to bind their organizations.

"From a personal standpoint as a Mac user, a native MHS package will have a lot to offer [in a mixed environment]," said a CE Software official. "Gateways can be slow, go down and, in general, be fairly unsatisfying to work with."

However, according to Richard Skeie, president of CE Software, at least part of CE Software's decision to offer an MHS package was based on the grow-

ing trend for E-mail — like other applications — to separate the application from underlying mechanisms that generally limit the type of hardware or operating system on which it can run.

"Apple's [Open Collaboration Environment], Microsoft [Corp.'s Microsoft Mail API, Vendor Independent Messaging and] anyone who has a standard that's likely to be accepted, we'll write to it,"

"Gateways can be slow, go down and, in general, be unsatisfying to work with."

▲▲▲

Skeie said. "A couple of years in the future, we won't need to do an [E-mail] transport [engine]."

Novell said the new acceptance of MHS, however, has been spurred by the changing nature of networks. "In a larger sense, it has to do with the Mac becoming more a part of the business office solution and less a part of a separate culture," said Carey Heck-

man, director of Novell's messaging services marketing. "Messaging that misses someone in your organization is worse than no messaging at all."

CE Software will offer a Macintosh client that connects to an MHS server engine running on Novell's NetWare. NetWare for Macintosh will be required to make the network connection, however. Ironically, QuickMail for MHS users will still reach their Macintosh brethren running off a native QuickMail server through an MHS gateway.

CE Software has not set a delivery date or prices for the new client.

The Da Vinci eMail for the Macintosh, due out later this year, costs \$795 per server and will come with Version 2.1 of Da Vinci eMail. Da Vinci recently bought the rights to and is selling a resuscitated MacAccess, the original Macintosh MHS E-mail application created by Action Technologies, Inc., also the creator of MHS.

Starting at \$295 for a starter kit of 10 users, the revamped MacAccess will offer Macintosh users basic access to a Da Vinci eMail net until Da Vinci's own internally developed Macintosh client ships in Version 2.1. □

Netnotes

continued from page 17

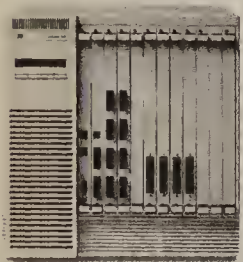
GigaTrend, Inc. recently released MasterDat NLM, a 5G-byte digital audio tape (DAT) backup unit that can be used to back up file servers and workstations on a Novell, Inc. NetWare 3.11 local-area network at speeds of up to 50M byte/min, according to the company, based in Carlsbad, Calif.

The hardware/software package includes GigaTrend's DAT backup hardware and its MasterSafe software. MasterSafe consists of NetWare Loadable Modules (NLM) for each server to be backed up, a DOS application for each workstation to be backed up and an application for the dedicated workstation performing the backup.

Although the product cannot back up Apple Computer, Inc. Macintoshes or OS/2- or Unix-based clients, with Novell's Storage Management System, MasterDat NLM can back up OS/2, Unix and Macintosh files residing on the file server.

MasterDat NLM, which includes 4mm DAT hardware and the MasterSafe software, is available now. The unit is priced at \$6,450. □

Distributing bandwidth on the netw



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And should you want to connect your most bandwidth-hungry users directly to FDDI—you can configure up to 42 fiber connections.



OS/2 helps to figure premiums

continued from page 17

ning under OS/2 on the workstation, will recalculate the premium automatically, enabling the representative to quote the new premium almost instantaneously, he explained.

Previously, clerks at dumb terminals submitted all insurance premium calculations to the mainframe, which processed the requests in batch mode overnight.

The application saves time and expensive mainframe processing power because the calculation can be performed immediately at the OS/2 workstation.

In addition, the new application takes advantage of OS/2's inherent multitasking features. While the application is calculating the customer's new premium, the representative can run an artificial intelligence-based application that conducts a background check of the client's current insurance coverage so the customer service agent can suggest additional services to the caller.

"The representative doesn't need to call the customer back to capitalize on a marketing opportunity," Sievers said. "It's an in-

valuable tool."

Running the same combination of applications under Windows would be slow and cumbersome because Windows is not designed to handle such processing-intensive routines, he added.

After the transaction, the representative can temporarily save the policy file to the LAN server or set it up to be archived to a mainframe storage device overnight.

Each night, archived files are processed in a batch application on the mainframe and reinserted into the DB2 DBMS.

Files saved temporarily remain on the LAN server for later use in case a customer decides, for example, to think over a change.

In the future, Sievers said the application will also support images of customer insurance policies. Therefore, if customers had questions about their policies, agents could instantly retrieve an image of the original policy without the caller waiting for the agent to locate it and then call back with the information.

The company chose OS/2 because it met certain require-

ments, such as a graphical front end in Presentation Manager, the ability to support multitasking, and compatibility with COBOL, which the company used for its mainframe applications.

"Code portability is one of the beauties of OS/2," Sievers said. "It allows us to take our workstation applications and run them on the mainframe." The same program used to calculate customer premiums on the workstation can be used as the basis for a mainframe application that determines policy renewal amounts, he explained.

Sievers said OS/2's workplace shell is critical to the application because it more closely approximates a traditional desktop. For example, an agent or representative will view a set of folder icons on the workstation's screen.

"You'll have a policy folder, and in that folder will be a document called the original application," he said. "If you want to see that, you click on it. That will automatically fire up our image application, which will go out and feed index information to the image system and retrieve that document — all [transparent to the user]. It's a much more intuitive method of working with a computer." ■

Tool links LANs, pen-based units

continued from page 17

network resources such as printers or access other enterprise resources such as Novell, Inc.'s NetWare LANs through gateways.

IBM, with its announced plans to be a player in the pen-based computing field, licensed the Sitka technology because it believes "networking software is imperative to the success of pen computing," said M. Kathy Vieth, vice-president of tablet and entry systems technology at IBM.

Triant said IBM was attracted to Sitka's multiplatform connectivity capability, especially for the Macintosh.

For users of pen-based computers needing basic peer-to-peer connectivity, Sitka already offers PenTOPS, which uses an Apple LocalTalk connection to communicate with PCs, Macintoshes or Sun workstations running DosTOPS, MacTOPS or SunTOPS.

This LocalTalk connection gives users with proper security clearances transparent file and print access to all nodes on a network that have been designated as shareable.

Work is under way to offer other types of PenTOPS connec-

tions for things such as Ethernet or token ring.

Although the use of pen-based computers is just emerging, Triant believes their widespread use will change networking.

She predicted that networks will not always consist of predefined users set up in a configuration profile through network administration utilities. Instead, nets will consist of network citizens that cannot be predefined because they are mobile, coming and going as business needs dictate.

Mobilizing the net

In addition, Triant said the network might even become mobile. She described a scenario where everyone at a meeting would connect their pen-based computers to a digital dry-erase board and share information.

"Even business cards could be exchanged electronically," she added.

PenTOPS and PenCentral are available immediately to vendors. However, since PenTOPS is being bundled at no additional cost with PenPoint OS, actual delivery to users could be delayed until the end of the first quarter. PenCentral will be available from IBM in the future. ■

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Dialogue

What are the key barriers in overcoming local-area network security risks?

“The key barrier is decentralization and the spread of LANs into areas without traditional accounting safeguards. For instance, some of the research scientists within the hospital will set up their own LANs, and we aren't even aware that they're there.

“Ours is an extremely large and decentralized organization, and a lot of end users are not fully aware of security requirements and, therefore, do not take the appropriate security precautions.”

Dick Crane

Director of communications
Massachusetts General Hospital
Boston

“I've invested heavily in security training courses for my staff as well as in security equipment for our net. Bridges and routers, for example, allow you to control access to preselected applications on a server.

“Our executives need to send E-mail to people throughout the organization, but they also need to exchange confidential memos with one another. We're working to install a [security] process that lets executives send E-mail across the LAN but prohibits other users from browsing through the LAN servers and reading the confidential memos. This essentially creates a closed user group for added security.”

Brent Dell

Vice-president of systems
and facilities
AT&T Capital Corp.
Morristown, N.J.

“The biggest barrier is the decentralized nature of LAN administration. From an audit viewpoint, centralization is the desired path, but with LANs, you can't easily implement central security procedures — at least not yet.

“A bank has highly confidential customer data on its network, and we wouldn't dream of putting that information on a LAN until the security issue can be better guaranteed. The lack of adequate security is a key area limiting the implementation of LAN technology.”

Fred Harde

Senior data processing officer
The Riggs National Bank of
Washington, D.C.

MANAGEMENT PROFILE



Whirlpool's Richard Koeller

PHOTO ©1992 JOHN THOMPSON

Whirlpool exec stresses need for rapid data access

EIS, videoconferencing give company an edge.

By Joanne Cummings
Staff Writer

BOSTON — A top network executive at Whirlpool Corp. recently told NetWorld 92 Boston attendees that companies intent on succeeding in global markets must make business information immediately available to executives and customers.

The key to providing information worldwide is the tight integration of networking and business goals, said Richard Koeller, vice-president of information technology at Whirlpool and keynote speaker at the show.

“The days of separateness for information technology are over,” Koeller said. “To be truly successful in the global marketplace, information technology must be an integral part of the normal way of doing business.”

Adhering to this philosophy for the past 10 years has propelled Whirlpool to be today's top appliance manufacturer in Brazil and the U.S., as well as the second largest manufacturer in Canada, Europe and Mexico. It has also helped the company increase its sales from \$2.5 billion in 1981 to \$6.6 billion last year.

“Things are different in a global company vs. a U.S. company,” he said. “World events affect your day-to-day business, and if you can't keep abreast of information, you can't be successful.”

Information technology is the crucial factor in providing executives with access to business data. Whirlpool, for instance, developed a worldwide videoconferencing system and an executive information system (EIS) for decision support.

“We wouldn't even have been

able to think about implementing a decision support system if we didn't have a global net in place,” Koeller said.

Both the decision support system and videoconferencing network provide virtually instant access to critical information, whether an executive is in Whirlpool's Benton Harbor, Mich., headquarters or any one of its European or South American operations bases. “Information technology is making the business possible,” he said.

The EIS, which employs the

“The days of separateness for information technology are over,” Koeller said.



same Whirlpool-developed graphical user interface whether the user is in the U.S. or overseas, gives each executive access to information sources, such as the Dow Jones News/Retrieval Service, at the click of an icon.

The system also provides access to electronic mail and corporate databases, and each icon is customized for Whirlpool. For example, the listings for *The Wall Street Journal* articles available through the Dow Jones service are prefiltered to provide only information pertaining to Whirlpool's lines of business, he said.

As an example of the effectiveness of the EIS, he recounted how

(continued on page 22)

Users creating new twists to outsourcing

Firms temporarily hand over control to focus on revamping nets or building strategic applications.

By Wayne Eckerson
Senior Editor

NEW YORK — Many companies that have outsourced information systems (IS) and network operations in the past two or three years have done so to cut costs and prop up sagging profit margins.

But users are finding a number of innovative new ways to take advantage of outsourcing. For example, some companies are outsourcing data center and network operations on a temporary basis while they build a distributed computing platform or strategic business applications. Others are giving outsourcing vendors responsibility for applications development, an area often considered too strategic to off-load to service providers.

These new trends in outsourcing came to light at a recent conference here, titled Transitional versus Functional Outsourcing, sponsored by The Yankee Group, a Boston-based market research firm.

Several companies have recently signed contracts that fall under the rubric of transitional outsourcing, said Howard Ander-

son, managing director of The Yankee Group. Anderson defines transitional outsourcing as a short-term arrangement designed to free up time and money to help a company migrate from one vendor's computing platform or IS architecture to another.

Revlon, Inc., for example, recently signed a two-year, \$9 mil-

Users are finding a number of innovative ways to take advantage of outsourcing.



lion contract with Andersen Consulting that gives the consulting firm responsibility for managing much of Revlon's IBM 3090 mainframe-based IS systems operations.

The cosmetics firm signed the deal to free up time and resources to implement a distributed cli-

(continued on page 22)

GUIDELINES

BY ERIC SCHMALL

New managers should start with network audit

What's the wisest thing a new manager can do after taking over a network department? Call in corporate auditors to conduct a full-blown review of network operations. Auditors can quickly determine whether procedures and policies are being followed and properly documented. Also, they can make recommendations for improving operations — opinions which hold a lot of weight with senior management.

Admittedly, most network managers view the audit department as an adversary that disrupts the work process and intrudes upon the daily schedule. The idea of outsiders with little knowledge of networking snooping through files, observing operations and then publishing an evaluation of the department's performance sends chills along a net manager's spine.

Net managers should realize, however, that auditors can act as positive catalysts for change.

An auditor's report detailing problem areas can give added authority to a network manager's request for more resources or funds. An auditor's endorsement may help solicit the money needed to tighten security measures or hire a consultant to revise new disaster recovery plans. With an auditor's assistance, budget issues can dissolve and bureaucratic decision-makers

(continued on page 22)

Users creating new twists to outsourcing

continued from page 21

ent/server computing platform using Hewlett-Packard Co. minicomputers, according to sources.

For the next two years, Andersen Consulting will manage and maintain Revlon's network, data processing operations and IBM host applications. About 15 Revlon employees will be transferred to Andersen Consulting's payroll.

Once Revlon finishes implementing the distributed architecture, it will reassume control over its network and computing environment, according to Andersen Consulting officials.

Until recently, most companies kept in-house strategic IS functions such as applications development and outsourced the rest where it made economic sense. But several companies have recently bucked the trend and farmed out applications development activities, as well.

Continental Bank outsources

For example, Continental Bank Corp. last fall signed a 10-year, \$700 million deal with IBM's outsourcing subsidiary, Integrated Systems Solutions Corp. (ISSC). In addition to farming out the management of data processing and other IS operations, Continental Bank handed over applications development.

What was unique about the deal, besides

its scope, was that ISSC subcontracted the applications work to Ernst & Young. Perry Harris, director of management strategies at The Yankee Group, said he expects many outsourcing vendors will team up with consulting firms or traditional systems integrators to handle users' applications development work.

Harris said outsourcing vendors may subcontract value-added work including applications development to firms, such as Ernst & Young, that have greater expertise in those areas. The fact that those services are labor-intensive and have lower profit margins is another reason to pass them off.

He said he also believes large outsourcing vendors, such as Electronic Data Sys-

tems Corp., ISSC and Andersen Consulting, will increasingly try to convince outsourcing customers to farm out value-added or strategic IS projects. The provisioning of value-added services will distinguish one vendor from another in what has become an increasingly competitive outsourcing marketplace, he said.

Gerald Rydberg, a marketing manager at Andersen Consulting, said users will become more comfortable with outsourcing applications development and strategic IS projects as they get more accustomed to the idea of handing over more day-to-day IS functions. "It usually takes outsourcing customers about a year before they are willing to consider outsourcing more strategic IS projects," Rydberg said. □

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Exec stresses need for rapid data access

continued from page 21

one company vice-president made the transition from a post in the U.S. to another in Comerio, Italy. Sitting at a terminal there, he typed an E-mail message to his former secretary in Benton Harbor and also wrote a memo to his new boss in Comerio.

"It was as if I had never left Benton Harbor," Koeller said the executive told him.

Whirlpool's videoconferencing

Another way networking helps make Whirlpool's global business possible is through the videoconferencing system.

The company currently uses dedicated 384K bit/sec circuits to support video between its U.S. sites and 128K bit/sec circuits to link its international locations for videoconferencing. Beyond the videoconferencing system's basic benefits, such as reducing travel expenses and enabling expanded participation in meetings, Whirlpool found that if it had not been for the videoconferencing network, the company would not have been able to do business at all during the Persian Gulf War.

For safety reasons during that time, Whirlpool's top management curtailed all international travel, even though the company was in the midst of building a joint European venture with Philips Industries N.V.

"We had one foot in the door and another on the dock," Koeller said. "If it hadn't been for information technology, meaning that the videoconferencing network was already in place, business would have ground to a halt and a lucrative deal might not have happened." □

Managers should start with net audit

continued from page 21

become suddenly galvanized into action.

Auditors can also bring a fresh, new sense of order to a network shop. Trained in the science of establishing procedures and controls, auditors can offer organizational ideas to improve efficiency.

Net managers who keep auditors at arm's length miss an excellent opportunity to improve their department.

Foregoing an audit is like postponing an annual physical check-up: Problems that would have been identified and cleared up are left to fester until they become unmanageable and potentially lethal to net departments and the careers of net managers. □

GLOBAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

Worth Noting

“Despite all the [European Community] initiatives [to allow greater competition between service providers and equipment suppliers in Europe], the reality of the marketplace continues much like it was in the mid-1980s.”

William Coopman
Telecommunications manager
Deere & Co.
Moline, Ill.

World News

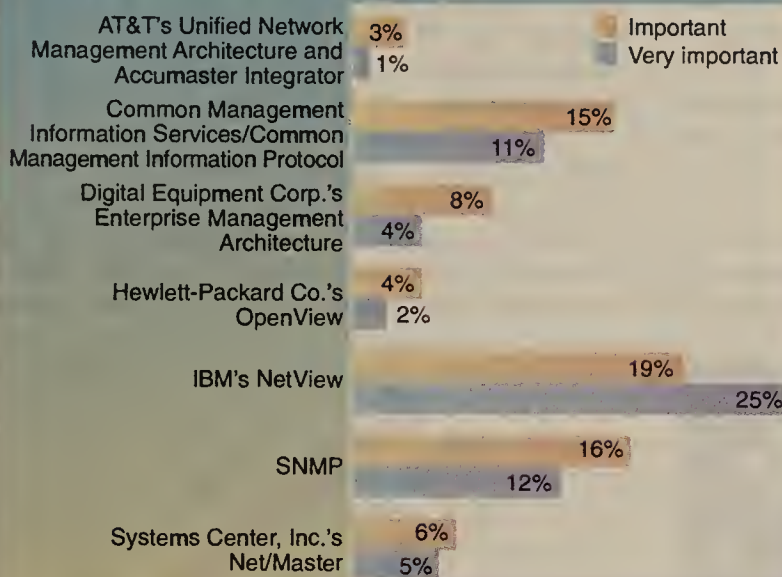
Japan's dominant domestic carrier, **Nippon Telegraph and Telephone Corp. (NTT)** recently announced plans to join the Open Software Foundation, Inc. (OSF) as a user member. NTT officials said there will be “harmony” between OSF's technologies and standards and NTT's efforts to develop open standards for computers and net switches in Japan.

AT&T recently announced a multimillion-dollar joint venture with **Dalnya Svyaz** in St. Petersburg, Russia, to provide digital and international network services in the Commonwealth of Independent States. AT&T's Network Systems International unit in the Netherlands will own 68% of the joint venture, which will be called AT&T of St. Petersburg. Dalnya Svyaz will hold the remaining 32% share.

Advanced Telecommunications Corp. recently introduced a new billing plan for international calling services. Under the plan, called **Acclaim II International**, users are charged for a minimum of 18 seconds on each international call, even if the call is less than 18 seconds in duration. Calls longer than that are billed in six-second increments. □

European view of network management

Percentage of European IS executives that rank the following integrated net management technologies as either important or very important.



Figures are based on telephone interviews with 512 European IS executives conducted between June and July 1991.
IS= Information systems

SOURCE: BUSINESS RESEARCH GROUP, NEWTON, MASS.
GRAPHIC BY SUSAN J. CHAMPENY

Study finds wide variations in European telco rates

Report cautions deregulation of monopolies.

By Elizabeth de Bony
IDG International News Service

BRUSSELS, Belgium — The Bureau Européen des Unions des Consommateurs (BEUC), a European consumer group based here, recently released a report that finds European carriers' calling charges do not reflect the actual cost of providing services.

Officials of the group also cautioned that efforts by the Commission of the European Communities (CEC) to force carriers to align network service prices with actual provisioning costs and to introduce greater net competition may not benefit consumers.

During a press conference announcing the publication of a 90-page study comparing prices for voice telephone services across the European Community, Laura Mosca, a BEUC economic advisor, said, “The extensive differences in prices between the member states indicate that, currently, there is absolutely no link between the tariffs imposed and the cost of [providing a network] service.”

But she expressed concern that users may not benefit if the CEC succeeds with its strategy to require national telephone monopolies to align telephone tariffs with actual provisioning costs.

The report points out that, while international calls may have decreased over the last four years, for example, in the U.K., where British Telecommunications PLC and Mercury Communications, Ltd. compete, tariffs on domestic calls have increased.

“If the U.K. is any example of what will happen, then we are concerned” about any future plans for deregulating the monopoly, Mosca said.

The report analyzes prices in the European Community as well as Austria and Switzerland. It compares, on a country-by-country basis, the cost of installation and minimum monthly fees, plus the cost of domestic, long-distance and international calls.

She explained that BEUC will use this study as a basis for its opinion on a planned European Community directive on open network provisions for voice communications.

The study shows that telephone installation costs vary from European Currency Unit (ECU) 32 (\$41 U.S.) in Germany to ECU 216 (\$276 U.S.) in Denmark.

For monthly subscription rates, Greece charges a low ECU 3.81 (\$4.88 U.S.), while Ireland imposes a hefty ECU 13.27 (\$16.99 U.S.), with other countries falling between the two.

Long-distance calls in Denmark and the Netherlands cost one-sixth the price of similar calls in Austria and Ireland.

At peak times, the Netherlands and Denmark rates are still the least expensive and cost one-fifth that of similar rates in Italy and Austria.

On average, domestic calls in Spain and Ireland are the most expensive, while domestic calls in Germany and the U.K., via Mercury's network, are the least costly. □

Challenges remain for users in Europe

High equipment costs and carrier restraints make the creation of European nets a trying experience.

By Barton Crockett
Senior Editor

PARIS — Although the effort to create a Common Market in Europe has helped network users somewhat by allowing greater competition between service providers and equipment makers, U.S. users say they still are not satisfied.

Even when the ballyhooed deadline arrives at the end of this year for a European Common Market, users will still have to contend with costly and bureaucratic carriers that make it difficult to build nets on the continent, according to attendees at the recent World Communications Seminar here.

Conference-goers said the outlook remains glum because Europe has failed to create the same kind of open competition in Europe that users enjoy in the U.S.

“[European telecommunications is] in a transition period, and it's a heck of a lot better than it was,” said William Coopman, telecommunications manager at Deere & Co., during a keynote speech at the conference. “But it's still extremely frustrating at times trying to construct and operate a telecommunications network [in Europe].”

The seminar was sponsored by the International Communications Association, a leading user group based in Dallas, and the International Telecommunications Users Group (INTUG) in London.

Competition expanded

Users at the seminar acknowledged that the Commission of the European Communities (CEC) has made some progress. Most notably, the CEC has pushed through reforms that force Common Market countries to allow competition in the supply of network equipment and value-added services. Users said these reforms have been successfully implemented in most Common Market countries.

But even with progress on these fronts, problems remain. One of the biggest issues is that network services are still much more expensive in Europe than similar services in the U.S. This imbalance is impeding strategic net plans.

For instance, John Sale, network planning manager with Rank Xerox, Ltd. in London, said

his company would like to move forward with plans to consolidate five European data centers into a single center.

Sale said the consolidation would reduce expenditures on data center operations but increase expenditures on wide-area network transmission services. This is because more international private lines would be needed to link users to a single data center than to the five regional sites.

In the U.S., the savings from such a consolidation would easily outweigh the increase in WAN

“It's frustrating at times trying to construct a telecommunications network [in Europe].”

▲▲▲

service expenditures. But in Europe, the increase in WAN transmission expenses would wipe out the cost savings in data center operations.

Melding data centers

As a result, Rank Xerox is delaying plans for the European data center consolidation. According to Sale, network service prices in Europe may fall enough by 1994 to make it cost-effective for the company to go ahead with the data center plan.

Users also complained that carriers in many European countries are still slow and rife with bureaucracy, noting it is still impossible, in most instances, to deploy a network spanning Europe using a consistent set of net equipment and services.

Most European countries, for example, offer domestic and international Integrated Services Digital Network. But users cannot deploy the same ISDN terminal equipment across European countries because the different equipment does not interoperate, Sale explained.

Many users argued that the only way for these problems to be resolved is for a pan-European carrier to emerge that puts as much heat on European monopolies as MCI Communications (continued on page 24)

FCC to revamp complaint process

continued from page 11

Communications Association (ICA) and the Consumer Federation of America both endorsed the Allnet study. Many others complain privately.

In an earlier interview, Brian Moir, ICA counsel, said "There is an increasing trend of ratepayer concerns not being addressed by the FCC." He added that the FCC has been devoting its resources to less pressing concerns, such as instituting price cap regulation, instead of addressing existing complaints.

Although Sikes did not mention Allnet's study in announcing the revised complaint

procedures last week, he did indicate that he called for an internal investigation last year.

Making complaints top priority

Roy Morris, Allnet's public policy and government affairs director, said he believes the investigation was prompted in large part by his firm's report on FCC problems. Morris said he is encouraged that the FCC has brought the problems out in the open but said the agency will not be able to turn things around "unless they make [complaints] a top priority at the commission."

The FCC will have to add personnel to make a dent in the problem, Morris said, and he is skeptical that that will happen. **□**

AT&T arms PBX line against hacker fraud

continued from page 11

invalid attempts to access the DISA port listed on the report.

For hackers, gaining access to the switch's remote system administration port — which network managers use to reconfigure the PBX and manage employee calling privileges — is like hitting the jackpot, Hanley said.

Like the DISA port, the system administration port has a telephone number that can be accessed through a phone call.

If a company does not use any of the four security levels supported by the Generic 3, the hacker only needs to hit the

right number to obtain access to the port.

"Once hackers gain access to the system's administration port, they can essentially call the world," Hanley said.

Once in, the hacker can view the list of security codes and calling privileges for each station and use that data to commit toll fraud. "Hackers prefer to view this information and go undiscovered rather than make changes that could tip off a system administrator to hacking," he said.

Toll fraud has reached epic proportions largely because users fail to implement security features supported by their switches. For example, network managers provide traveling employees with 800 and direct-inward dial numbers they can use to place outbound calls through the company's PBX but often do not implement access codes designed to thwart hackers.

"PBX administrators oftentimes are afraid to tell executives they have to dial a long [access] code before they can get a dial tone to place outgoing calls," Hanley said. "It's a lot easier to explain why [the code is necessary] after the company has been burned for thousands of dollars in fraud." **□**

Washington Update

continued from page 11

annual Cellular Telecommunications Industry Association conference recently in New Orleans, Sikes told cellular firms — many of whom want to provide PCS — that the future looks good.

"If at all possible, we will complete our work in the next 12 months on providing new opportunities in PCS," Sikes said. He has already stated that a proposal outlining major PCS issues should be available this summer.

AT&T takes FCC to task. AT&T recently took the Federal Communications Commission to court in the wake of the agency's decision to dismiss the carrier's complaint against MCI Communications Corp. regarding off-tariff deals.

AT&T is upset with an FCC decision made in late January to dismiss a complaint the carrier filed claiming that MCI's custom net deals, made through contracts rather than tariffs, are illegal. **□**

Challenges remain for users in Europe

continued from page 23

Corp. put on AT&T in the 1980s.

"Competition right out of the starting block is a lot different than waving a wand over a particular part of the market and saying, 'This market is hereby declared liberalized,'" Deere's Coopman said.

Currently, Europe does not have a pan-European service provider because most Common Market countries give local carriers a monopoly over the delivery of public switched telephone services.

But this monopoly could fall. Peter Smith, INTUG chairman and international telecommunications manager with Reuters Holdings PLC in London, explained that the CEC is reevaluating the success of its efforts to create a Common Market in network services and equipment. Once the review is completed, the CEC may decide to force European Community countries to allow competition in the supply of public switched telephone services. **□**



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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Brightwork unveils LAN server monitor

Brightwork Development, Inc. recently unveiled software that monitors server performance on Novell, Inc. NetWare 2.X and 3.X local-area networks.

The vendor's **LAN Server Watch** software resides partly on a personal computer running Microsoft Corp.'s Windows 3.0 as well as on the file server to be monitored. It scans over 30 network parameters and thresholds, such as configuration, performance, security and capacity, which are automatically set or can be customized by a net manager.

When a threshold is exceeded, the software notifies the net manager via on-screen messages on the PC, electronic mail or telephone pager. It also offers suggestions to help resolve network problems when they occur.

LAN Server Watch can monitor as many as 25 file servers simultaneously from the same console.

Scheduled to ship in May, it is priced at \$695 per server license.

For more information, contact Brightwork at (800) 552-9876.

Ontrack offers recovery utility for NetWare 386

Ontrack Computer Systems recently unveiled a data recovery and protection software utility designed for NetWare 386 servers.

NetUtils 3 resides on any IBM 80386 or 80486 personal computer running Novell, Inc. NetWare 386. It consists of three hard disk diagnostic and repair programs. NetScan searches for and repairs file structure errors, while NetFile performs file recovery and maintenance, and NetDisk handles sector editing. Together, they enable a net manager to repair server problems by scanning for bad blocks, checking or repairing lost blocks or cross-linked files and searching any file for a given pattern in hexadecimal or ASCII format.

Scheduled to ship in April, the package costs \$395.

For more information, call Ontrack at (800) 752-1333. ■

Novell OKs Codenoll's FDDI cards

By Joanne Cummings
Staff Writer

BOSTON — Codenoll Technology Corp. announced at the recent NetWorld 92 Boston show that Novell, Inc. has certified its MegaServer line of FDDI adapters as NetWare-compliant.

The announcement assures users that they can link NetWare servers over a 100M bit/sec Fiber Distributed Data Interface network based on Codenoll adapters. Previously, users had no assurance that FDDI adapters could support NetWare Internetwork Packet Exchange (IPX) traffic over an FDDI ring.

"Many companies are attaching PC LAN servers to FDDI networks," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "Codenoll's products are the only Novell-certified solution for attaching a NetWare server directly to an FDDI network."

The company's MegaServer adapters have been outfitted with new Open Driver Interface (ODI)

network drivers and were certified under Novell's Independent Manufacturer Support Program, a branch of Novell Labs that assists vendors in building NetWare-compatible products by providing driver development support and testing as well as certification services.

To become fully NetWare-compatible, the adapters needed ODI drivers that also supported FDDI specifications, according to Brian Ramsey, director of marketing at Codenoll. Thus, together with IMSP, Codenoll defined a new media support module for the ODI driver that specifies FDDI frame types and a maximum packet size of 4,202 bytes.

In addition, the Codenoll driver supports IPX, the Transmission Control Protocol/Internet Protocol and Open Systems Interconnection protocols, enabling the adapters to pass these protocols over an FDDI network. The adapters also support Version 7.0 of the FDDI Station Management protocol, Ramsey said.

The products support dual- and single-attached stations, as well as multimode and single-mode fiber.

MegaServer adapters are currently available and range in price from \$4,395 to \$5,995.

For more information, contact Codenoll at (914) 965-9811. ■

RAD Data adds modules to token-ring hub family

BOSTON — RAD Data Communications recently unveiled three new modules for its RAD-ring token-ring wiring hub and an enhanced version of its token-ring extender.

The new products, rolled out at NetWorld 92 Boston, are designed to offer token-ring users a variety of low-cost connectivity options, said Michael Horwitz, RAD Data's marketing director.

The firm announced three modules for its RADring token-ring hub, a 20-slot wiring concentrator that can support a mix of 4M and 16M bit/sec token-ring nets over fiber-optic, unshielded or shielded twisted-pair media.

The Jitter Attenuator Module (TJA) increases the distance from the workstation to the hub by reducing network jitter and providing signal regeneration on the hub's backplane. The TJA will enable users to connect nodes as far as 2,500 feet from the hub. Until now, users were limited to distances of up to 300 feet.

The TL-4/CX four-port coaxial cable module, designed to utilize existing coaxial cable, links up to four workstations to the to-

ken-ring hub via RG-62 coaxial cable. It can link workstations as far as 900 feet from the hub on a 4M bit/sec token ring and up to 300 feet for nodes on a 16M bit/sec token ring.

The TL-2/ED is a two-port repeater/amplifier module that lets users link two workstations to the token-ring hub over distances of as far as 600 feet. It is available in unshielded and shielded twisted-pair versions.

Available now, the TJA costs \$600, the TL-4/CX costs \$325 and the TL-2/ED costs \$225.

The company also enhanced its stand-alone token-ring extender unit, the TRE-8, to support both 4M and 16M bit/sec token ring. Previously, it supported just 4M bit/sec networks.

The extender acts like a media access control-layer bridge, linking remote local-area nets of up to eight workstations to a central token ring using a variety of wide-area interfaces, including V.35, V.24/TS-232, X.21, V.36/RS-422, RS-530 or four-wire. Available now, it is priced at \$800.

For more information, contact RAD Data at (201) 587-8822. ■

BMC pack optimizes 3270 performance

Ultraopt/VTAM bolsters 3270 terminal performance by reducing traffic overhead created by VTAM.

By Joanne Cummings
Staff Writer

BOSTON — BMC Software, Inc. recently announced at NetWorld 92 Boston software that improves 3270 terminal performance by streamlining VTAM operations.

The company's new Ultraopt/VTAM reduces redundant messages sent between a VTAM host and 3174 controllers, resulting in better response times for 3270 users.

According to Ted Van Duyn, senior vice-president of research and development at BMC, Ultraopt/VTAM can cut 3174-to-host overhead traffic by 40% to 95% and inbound traffic by 30% to 90%.

Ultraopt/VTAM is software that resides on any MVS mainframe running VTAM and is designed to improve file-transfer response time for 3270-to-host transactions as well as reduce the amount of CPU cycles required to process those transactions.

The software interacts with the 3174's Local Format Storage feature, which enables the controller to store 3270 screen formats. Rather than transmitting every screen format across the network to a 3174, Ultraopt/VTAM sends a message to the controller telling it which locally

The new software also includes a Bypass Send and Receive function that enables users utilizing session management software to reduce CPU consumption. Most session managers require that each send and receive message for different applications be routed through VTAM, even if the applications reside on the same host.

Ultraopt/VTAM intercepts these messages and sends them directly to the applications, rather

"The user sees no difference in the way transactions occur, except for the fact that they occur much faster,"
Van Duyn said.

▲▲▲

Ultraopt/VTAM can cut 3174-to-host overhead traffic by 40% to 95% and inbound traffic by 30% to 90%, according to Van Duyn.

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stored screen to transmit to the terminal. That significantly reduces the amount of data traversing the net, Van Duyn said.

In addition, Ultraopt/VTAM reduces the redundant overhead messages that VTAM uses to pass information between the host and terminal. By stripping out these redundant messages, the product streamlines the 3270-to-host communications, significantly easing the host's processing burden.

er than going through VTAM. This allows the entire system to perform faster, Van Duyn said.

Ultraopt/VTAM requires no application modification because it works at the VTAM level, he said. Therefore, users can install the product and see performance benefits immediately.

"There's no end-user training required," he explained. "The user sees no difference in the way transactions occur, except for the fact that they occur much faster."

Early users concurred. According to Mark Leon, network manager at Cooper Industries, Inc.'s Cooper Lighting Group in Elk Grove Village, Ill., the software is simple to install and offers noticeable improvements in response time.

"We've been working with the software for three to four months now," Leon said. "It took me about 20 or 25 minutes to install it, and almost right away, users were saying they noticed that the response time was much faster."

Cooper Industries has an MVS mainframe linked to 3174 controllers supporting about 2,000 3270 terminals.

Ultraopt/VTAM is available now and is priced starting at \$24,500, depending on CPU size.

For more information, contact BMC at (800) 841-2031. ■

OPINIONS

LOCAL-AREA NETWORKS

BY RONALD KEITH

It's about time that Novell gives users a break

Novell, Inc. has become king of the local-area networking world. But in the process, it has either forgotten or doesn't care about the customers that helped make it what it is today.

Novell now owns the IBM LAN world — and knows it. If you decide to install a Novell network in your office, be prepared to keep parting with your money.

First, you're going to have to dish out \$4,500 to \$5,000 for a NetWare 386 100-user license. However, you'd better take a close look at what you're getting for that price. You get software for a good networking package and documentation that is weighty but not necessarily complete. If you should find this mound of documentation somewhat intimidating, don't be discouraged. There's help out there.

If you decide to install a Novell net in your office, be prepared to part with your money.

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Want to learn how to install your Novell network? Training is provided by the vendor for an approximate fee of \$1,500 for a three-day course at your nearby authorized Novell training center.

And you can pay for this training with MasterCard or Visa.

If you feel you need a little extra support setting up your new Novell network after that, don't worry; help is but a phone call away. Novell provides telephone support for NetWare for a mere \$100 an hour.

Don't forget your hardware

If you're having trouble with your hardware, one of the first things Novell support technicians may ask is whether your equipment is Novell-certified. It's not? Well, you don't want to waste all that money you've put into Novell software, training and support. You'd better go buy a Novell-certified server with Novell-certified hard drives. Don't forget the Novell-certified Ethernet network interface cards for the Novell-certified client hardware.

In fact, maybe you'd be better off if you replaced every piece of hardware in the office, including the outlets in the walls, with Novell-certified equipment. Otherwise, Novell support technicians may not be able to properly address your problem until they're sure the fault isn't in your hardware.

I have a message for Novell: Give users a break.

Unfortunately, Novell can continue these practices as long as it owns the LAN world. But what it should be doing is paying closer attention to its customers. Novell should remember that customers have little loyalty, and companies such as Artisoft, Inc., Banyan Systems, Inc. and Microsoft Corp. are waiting in the wings, ready to offer whatever it might take to lure those customers away.

Currently, Novell is displaying the kind of arrogance that can be the eventual death of both computer and networking companies. Ashton-Tate Corp., for example, once held a virtual lock on the personal computer database market. While it blithely reveled in the success of dBase and offered few improvements in the product, other companies took advantage of Ashton-Tate's kingly inactivity and usurped the throne.

Novell thinks it's the king of networking. But here's some advice for the company: Take a close look at the horrified faces of your customers before the artillery of your competition attacks. ☐

Keith works in Suitland, Md., as a consultant for Computer Sciences Corp.

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EDITORIAL

IBM's LAN Server campaign: A strategy full of promises

Show-goers at IBM's Server Day presentation at the recent NetWorld 92 Boston show might have thought they had wandered into a campaign briefing for the New Hampshire presidential primary.

There was IBM's personal systems director for LAN systems, Art Olbert, laying out Big Blue's strategy for its LAN Server software for at least the next four years, complete with a string of promises that would make any politician jealous.

IBM promised bigger, faster, more dependable Personal System/2s to support LAN Server. The vendor even pledged to evolve LAN Server to support the Open Software Foundation, Inc.'s Distributed Computing Environment and other technologies as the basis for a heterogeneous local-area network environment.

IBM, of course, handled it with all the slickness of a well-

oiled political machine.

Olbert, for instance, exchanged witty remarks with a cartoon heckler named Seymour Chips that was projected onto a large screen.

At one point, Mr. Chips interrupted Olbert as he was mapping out IBM's vision for its open distributed LAN system. "Hey Art, whaddya call that? SAA II: The Empire Strikes Back?" Mr. Chips quipped.

It's ironic that IBM should bring up Systems Application Architecture. It appeared the vendor was attempting to rebuild LAN users' confidence in light of its own falling out with Microsoft Corp. as well as its inability to live up to promises made about its SAA.

No doubt some LAN managers are still seething from IBM's handling of SAA.

Billed originally as a means to erase differences among IBM's computing environments,

SAA has never amounted to much on the LAN side because IBM has been unable to produce OfficeVision applications for LAN users.

Granted, some portions of SAA, such as the Common Programming Interface-Communications, have a definite role in products, but the vendor's track record in developing SAA-based applications speaks for itself.

IBM's unsuccessful bid to revive a LAN-based version of OfficeVision proved to users that SAA wasn't all it was cracked up to be. And now, IBM is trying to convince customers to buy into its new vision for open distributed LANs.

Is IBM's vision admirable? Without doubt, it is. But rather than risk their networks and careers on implementing LAN Server now, potential customers might be better off waiting for IBM to deliver on its promises with reliable products. ☐

OPINIONS

DISTRIBUTED COMPUTING

BY JOHN R. RYMER

The limitations of PC LAN management constrain users

I recently came across a user story that sums up what's wrong with using today's personal computer local-area networks as distributed computing platforms.

The company in the story runs its core business applications on mid-range systems made by a large systems vendor. The company also has about 150 PCs and a handful of Apple Computer, Inc. Macintoshes — all largely stand-alone systems.

About a year ago, this company's management decided to create a new platform for applications that would unite the mid-range computers and the PCs. The new platform would be a PC LAN linked with the mid-range computers.

The company had two basic requirements for its new environment. First, the firm preferred dealing with either IBM or Novell, Inc. Therefore, the company decided to install token-ring PC LANs, mainly to make it easier to connect its IBM mid-range computers into the new LAN environment.

Second (and this is where the fun began), the company's systems managers imposed a requirement that the new environment — including files, servers, clients, bridges, routers and other devices — be manageable from a single console. However, neither IBM nor Novell could meet this requirement.

In the user company's judgment, IBM's LAN Network Manager offered excellent management functions for its LAN Server hubs and bridges. The company found that there was a lot to like about IBM's management facilities as well as its IBM Station Manager console as a management station.

The two key missing pieces in

Rymer is vice-president of Patricia Seybold's Office Computing Group in Boston and editor in chief of Patricia Seybold's Network Monitor, a monthly report devoted to distributed computing.

IBM's PC LAN management offering are clients and standards. IBM can collect only very limited information — physical addresses — from LAN Server clients and cannot directly manage clients from the manager console. IBM has a 3270-oriented data structure it plans to adapt to directly manage clients on PC LANs. But when will IBM deliver this facility? Nobody knows for sure.

To the user, the lack of client information in the management environment and the inability to directly control clients is a major problem. Without being able to manage clients from a central management console, the network administrators must continue to make "house calls" to users requiring support.

On standards, the company wants its supplier to support the Simple Network Management Protocol and the Common Management Information Protocol (CMIP), ensuring that it will be able to manage third-party products that implement those protocols. But IBM's LAN Manager speaks a proprietary management protocol with its hubs and bridges — just the elements for which the user might substitute third-party products. IBM eventually will add SNMP and CMIP support to manage hubs and bridges, but when?

Novell's LANtern network management system posed a different set of problems. First, LANtern is just becoming available for token ring this year. The user company is holding fire until it can see and test LANtern for token ring.

Second, Novell requires a stand-alone monitoring station running a management agent for each LAN segment under management. As the size of the networks under management grows, so does the cost of Novell's solution.

In addition, LANtern doesn't integrate information about the three main components of a NetWare LAN — the physical network, the server and the clients

— into a single view. LANtern manages the physical network. Novell offers separate utilities to manage servers. And like IBM, Novell's network management solution doesn't know enough about clients and can't directly manage them. Novell's new Network Management System promises to improve this situation, but it still leaves gaps.

On the issue of standards support, Novell uses SNMP as the protocol between LANtern and its management agents. However, Novell hasn't made any commitment to test its ability to work with the SNMP implementations of other vendors. This means users will have to test the ability of so-called standard boxes to communicate.

These problems with the management platforms supplied by IBM and Novell are made worse by the fact that neither vendor provides a full suite of management applications in areas such as configuration management, inventory, trouble ticketing, power management and performance management. These applications are required to satisfy the user company's need for a comprehensive management solution.

The net result was that, through a combination of products from either Novell or IBM and third-party vendors such as Brightworks Development Corp., the company could approach the management solution it wanted but not achieve it.

Despite its inability to buy — at any price — a decent LAN management environment, the user company is proceeding with its PC LAN installation. The company will rely on a third-party LAN service company while IBM and Novell get their management act together.

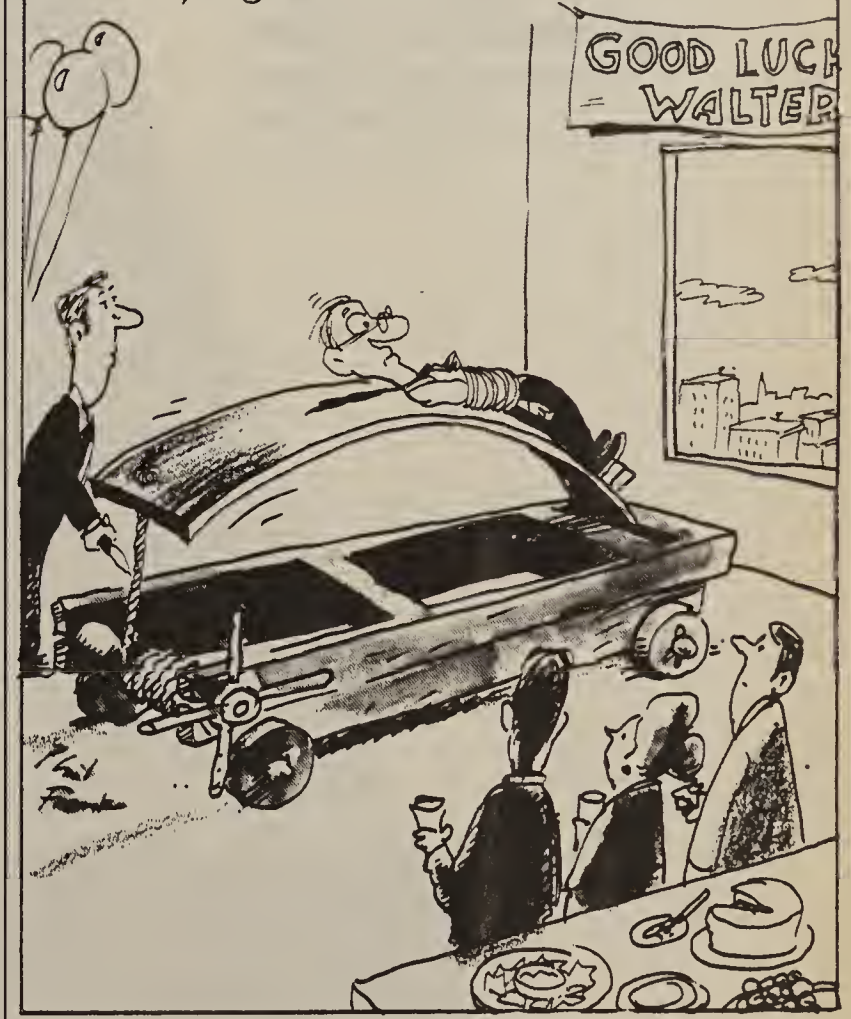
I find this user's story distressing. The time and expense required to put an acceptable LAN management platform in place is too large. It's no wonder we're not seeing a boom in network application development on PC LANs. ■

TELETOONS

BY FRANK AND TROISE

Network Manager's Handbook Rule 67.

Ask for a careful explanation of your company's "Flexible Retirement Plan" before signing any agreements.



Upcoming Buyer's Guides

In the communications industry, making the wrong decision about which products to buy can be catastrophic. Not only might it derail your promising career, but it could also mean your competitor gains a strategic edge over your company.

To make the most informed decisions possible, you need the specific, essential information about communications products that *Network World* provides in its Buyer's Guides. The following are a few upcoming guides to watch for.

April 27: Buyer's Guide to interactive voice processors. In this Buyer's Guide, we'll examine the interactive voice response systems on the market today. The article will tell you what users like yourself have accomplished with interactive systems. In addition, the article will discuss application generators and development tool kits that enable users to develop new call processing applications and customize their systems.

May 11: Buyer's Guide to

bridges. Users find it increasingly essential to have at their fingertips the most complete information about internetworking products as their companies depend more and more on interconnected LANs. This article will discuss the strengths, weaknesses, speeds and, of course, the prices of bridges currently on the market.

June 1: Buyer's Guide to hubs. There are literally hundreds of intelligent and nonintelligent hubs on the market. The primary focus of this Buyer's Guide will be devices that work with 4M or 16M bit/sec token rings, 10Base-T local-area networks or other forms of Ethernet.

If you have suggestions on what these articles should cover, or if your company makes equipment that should be listed in the charts that accompany any of these Buyer's Guides, please call Alison Conliffe, associate features editor, at (508) 875-6400. Or leave a message either on our bulletin board at (508) 620-1160 or on MCI mail at 390-4868.

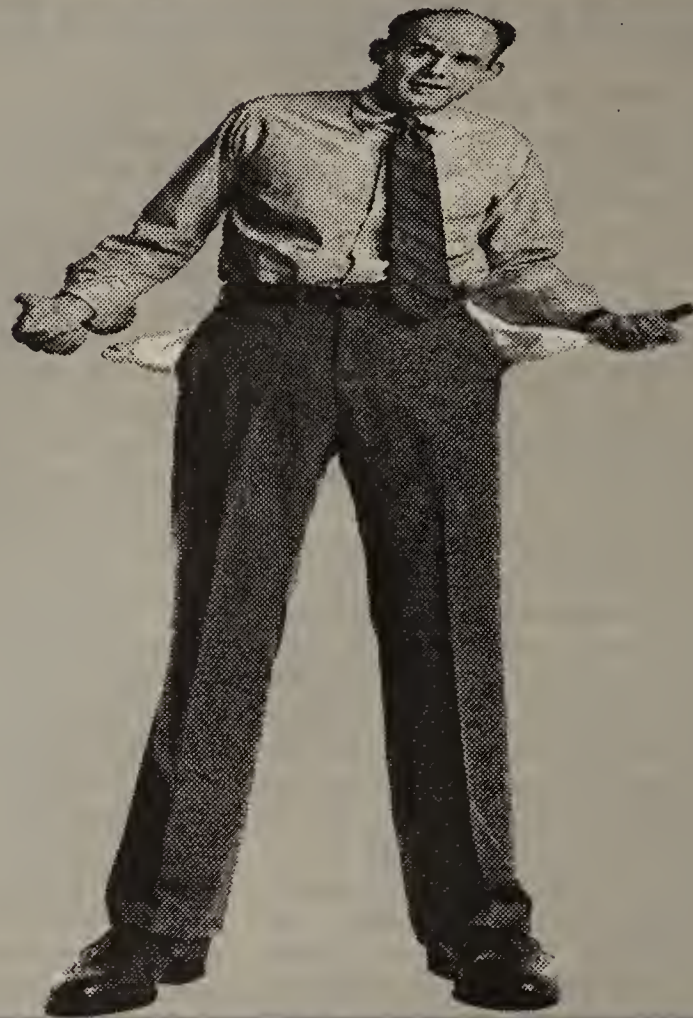
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GUIDE

AUTOMATIC
CALL
DISTRIBUTORS
AND MIS

Putting the calls through

Long the purview of late-night television hucksters, telemarketing has become the preferred way of selling or servicing many companies' clients. Telemarketing has become so popular that it has even spawned the creation of call centers, where hundreds — even thousands — of agents process calls.

Supporting these call centers presents a challenge to network managers who must select the equipment and services needed to make operations flow smoothly. The apex of this challenge is the selection of the proper automatic call distributor (ACD) to route incoming calls to appropriate agents and keep calls in a queue when all agents are busy.

There are a number of stand-alone ACD products that were engineered to perform these and other call processing-related tasks. Private branch exchanges and even key systems can be ordered with ACD features. They are known as integrated ACDs. There is also a mix of MIS software that enable managers to control ACD operations.

Stand-alone and integrated ACDs, as well as the MISs used to control them, are not the only options users have (see "Options spice up ACD market," page 43), but they are the focus of this Buyer's Guide.

An ACD's major task is to ensure that all agents get an equal number of calls as well as minimize agents' idle time.

ACDs also provide statistics and measurements that enable managers to reliably grade each agent's performance, predict staffing requirements and determine the need for more trunks and lines. While ACDs provide a lot of raw management in-

formation, they don't always do a good job of turning it into meaningful data. Consequently, a thriving industry has arisen for third-party MIS products.

This Buyer's Guide covers some of the issues users will encounter when choosing the ACD and MIS package that suits their needs. A chart containing information about stand-alone and integrated ACDs features begins on page 32. Another chart listing third-party MIS software appears on page 45.

While stand-alone ACD systems traditionally have been associated with large call centers, they come in a variety of sizes and sophistication levels to meet the needs of large and small operations.

When coupled with sales automation software — programs that manage lists of potential customers, schedule calls, track sales and generally make the call center agent's job easier — these systems become powerful telemarketing tools.

There are several important features built into ACDs. A typical

ACD supports a specific number of talk paths, which define the number of conversations that can be supported simultaneously.

Many ACDs provide universal ports that can be configured as trunks or lines. Users can create several groups of agents, each with its own supervisor, and assign certain trunks and lines to serve them.

In some ACDs, the number of agent groups, supervisors and agent lines are defined in the software, which eliminates the need to dedicate trunks or lines to serve specific agents.

Today, many ACDs interface to a voice mail system so callers have the option of leaving a message rather than waiting in a queue until an agent is available. Some ACD vendors work with their own propri-

(continued on page 33)

Selecting the appropriate automatic call distributor and MIS package is a tough challenge for users

LaBelle has been a consultant since 1967. His office is in Clearview, Wash. Fermazin is a senior technology analyst for Amoco Corp. in Chicago.

By THOMAS LABELLE and TOM FERMAZIN

Stand-alone and integrated ACDs (continued on page 41)

Vendor	Model/model type	Distribution	Switching information	ACD agent sets	Proprietary voice processing and messaging	Internode networking	Data processing capabilities	Price
Aspect Telecommunications San Jose, Calif. (408) 441-2200	Aspect CallCenter/stand-alone	In the U.S.: direct sales force and geographically centered distributor Norstan Communications, Inc.; in Canada: Norstan Communications Canada; internationally: via subsidiaries	Talk paths: 2,048; number of trunks: 744; number of groups: 128; number of supervisors: 32; number of agents: 608; redundancy included	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	Supports 64 ports with 20 callers per port hearing same message; maximum storage: 47 hours; act as overflow; returns to queue; caller does not lose original place in the queue	Uniform numbering plan; node overflow, including ANI, DNIS and caller's dial pad entries; look-ahead; least busy agent; database access; central management: Aspect Systems Management Center	Internal database; OAI; applications: Data-directed call routing, synchronized screen management, database inquiry and update; disaster plan	\$3,500 to \$4,500 per agent line
AT&T Parsippany, N.J. (800) 247-1212	Definity ACD/integrated	Direct sales force	Talk paths: 5,302; number of trunks: 4,000; number of groups: 255; number of supervisors: 60; number of agents: 1,024; redundancy optional; diversity included;	ANI/DNIS display; 2B+D interface; RS-232-C plug; Requires add-on data module; support 2500	Works with AT&T's Audix; supports 256 simultaneous conversations; maximum storage: 3,840 hours; act as overflow; returns to queue	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management: AT&T Call Management System	Internal database: AT&T Call Management System; applications: ISDN Gateway, ASAI Gateway; disaster plan: by contract with customer	\$2,400 per agent line, average
	System 25 ACD/integrated	Direct sales force	Talk paths: 240; number of trunks: 104; number of groups: 12; number of supervisors: 2; number of agents: 56	DNIS when used with AT&T's T-1-based Megacom 800 service; supports 2500	Works with AT&T's Audix; supports 12 simultaneous conversations; maximum storage: 12 hours; act as overflow	Uniform numbering plan; voice mail; database access; central management: AT&T Call Management System	None	\$20,000 to \$50,000 for comprehensive system
	Merlin II CMS/integrated	Direct sales force and dealers	Talk paths: 120; number of trunks: 56; number of groups: 6; number of supervisors: 1; number of agents: 28;	Any Merlin-compatible telephone	None	None	Disaster plan: by contract with customer	\$16,000 to \$30,000 for comprehensive system
	Merlin Legend Communications System/integrated	Direct sales force and dealers	Talk paths: 256; number of trunks: 80; number of groups: 6; number of supervisors: 1; number of agents: 28	None	None	None	Disaster plan: by contract with customer	\$16,000 to \$30,000
Cortelco USA, Inc. Memphis, Tenn. (901) 365-7774	ITT System 3100, Generic D6.2/integrated	Authorized dealers	Talk paths: 180; number of trunks: limited by size of the switch; number of groups: 32; number of supervisors: no limit; number of agents: 576; diversity included	Support 2500	None	None	None	Contact local distributor for quote
	SR 1000 PBX/ACD/integrated	Authorized dealers	Talk paths: nonblocking matrix; number of trunks: 1,376; number of groups: 255; number of supervisors: 24; number of agents: 512; redundancy optional	ANI/DNIS display; 2B+D interface; optional; RS-232-C plug; optional; support 2500	None	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail, optional; database access; central management	Internal database; OAI; disaster plan, emergency switch in stock and ready to ship	Quotations furnished through factory or distributor
Data Plus, Inc. Springfield, Va. (703) 451-7440	ACD+PLUS/stand-alone	Authorized dealers	Talk paths: configured by factory for nonblocking; number of trunks: 96; number of groups: 8; number of supervisors: 8; number of agents: 200	ANI/DNIS display; support 2500	None	None	Internal database; applications: proprietary computer interface; disaster plan: not a standard offering, but will negotiate	Available by factory quote
Ericsson Information Systems Anahelm, Calif. (714) 533-5000	MD-110 ACD/integrated	Direct sales force	Talk paths: 5,000; number of trunks: 5,000; number of groups: 32; number of supervisors: 8; number of agents: 240; redundancy optional;	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	Supports 96 simultaneous conversations; maximum storage: 292 hours; act as overflow; returns to queue	Uniform numbering plan; node overflow; least busy agent; voice mail; database access; central management	Internal database; OAI; disaster plan	Available from Ericsson representatives
Executone Information Systems, Inc. Darlen, Conn. (203) 655-6500	IDS/integrated	Direct sales and authorized distributors	Talk paths: 432 universal ports, to be apportioned between trunks and agent lines; number of groups: 25; number of supervisors: 10; diversity, call processing and statistics package run on separate processors	ANI/DNIS display; RS-232-C plug; support 2500	Supports 24 simultaneous conversations; maximum storage: 100 hours; act as overflow; returns to queue, maintains original position in the queue	Uniform numbering plan; node overflow; voice mail; central management	Internal database; OAI; applications: direct voice response; online historical data base; standard and user-customized reporting packages; integrated voice mail; disaster plan	\$500 to \$1,500 per agent line
Fujitsu Business Communication Systems, Inc. Phoenix (602) 921-5900	F9600/integrated	Direct sales force and approved independent dealers	Talk paths: 13,388; number of trunks: more than 3,000; number of groups: 256; number of supervisors: 332; number of agents: 1,024; redundancy, standard on larger switches, optional on others	ANI/DNIS display; RS-232-C plug; requires data terminal adapter; support 2500	None	Uniform numbering plan; node overflow; voice mail; database access; central management	Internal database, supports predictive dialing, an MIS is comarketed with 3rd party; OAI; applications: RS-232-C, Layer 1/LAP B; disaster plan: negotiated with individual customer	\$200 to \$1,700 per agent line
	Starlog/integrated	Direct sales force, approved independent dealers and, in some areas, general telephone	Talk paths: 254; number of trunks: 240; number of groups: 20; number of supervisors: 4; number of agents: 192	ANI/DNIS display; RS-232-C plug; requires data terminal adapter	None	Uniform numbering plan; node overflow; voice mail; central management	Internal database, MIS comarketed with 3rd party; OAI; disaster plan	\$200 to \$600 per agent line
Harris Corp. Novato, Calif. (415) 382-5000	20-20 ACD/integrated	Direct sales force and distributors	Talk paths: 960; number of trunks: 1,920; number of groups: 256 trunk, 16 agent; number of supervisors: 8; number of agents: 384; redundancy included; diversity included	ANI/DNIS display; 1B+D; RS-232-C plug	Supports 36 simultaneous conversations; maximum storage: 60 hours; act as overflow	Uniform numbering plan, node overflow; look-ahead; voice mail; database access; central management	Internal database; OAI; VoiceFrame System, with Host Interface Link and Workstation Interface Link; disaster plan	\$1,300 to \$3,600 per agent line
Hitachi America, Ltd. Norcross, Ga. (404) 446-8820	HGX 5300/5400/5500/5600/integrated	Authorized distributors	HGX 5300: talk paths: 256; number of trunks: 128; number of groups: 8; number of supervisors: 24; number of agents: 248; diversity; HGX 5400: talk paths: 512; number of trunks: 512; number of groups: 16; number of supervisors: 24; number of agents: 1,000; diversity; HGX 5500: talk paths: 1,024; number of trunks: 1,024; number of groups: 32; number of supervisors: 24; number of agents: 1,000; redundancy optional; diversity; HGX 5600: talk paths: 2,048; number of trunks: 1,024; number of groups: 48; number of supervisors: 24; number of agents: 1,000; redundancy included; diversity included	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	Supports 8 simultaneous conversations; maximum storage: 8 hours; acts as overflow; returns to queue	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management	Internal database; applications: ANSI's Switch to Computer Applications Interface; disaster plan: negotiate with local distributor	Add-on software, from \$450 to \$500 per agent line

ACD = Automatic call distributor
ANI = Automatic number identification

DNIS = Dialed number identification service
LAP B = Link Access Procedure B

OAI = Open Application Interface
UCD = Uniform call distributor

SOURCE: LABELLE & LABELLE, CLEARVIEW, WASH.

(continued from page 31)

etary voice mail systems, while others work with other vendors' voice mail systems.

Enabling callers to leave a message when all agents are busy can reduce the number of callers who hang up rather than wait. However, network managers need to make sure that the voice mail system will enable callers to easily return to the ACD if they change their mind and decide to talk to an agent. Some ACDs will return callers to their original place in the ACD queue instead of placing them at the end.

Users with multiple call centers should closely examine the ACD's networking capability. ACDs that support networking typically enable users to establish a uniform numbering plan across all nodes in the ACD network and enable calls coming into a busy call center to be distributed to a less busy call center elsewhere. Many ACDs support a look-ahead feature that ensures that the remote ACD is up and running and agents are available before actually switching calls there.

Several firms currently offer stand-alone ACDs. One of the oldest and most established manufacturers is Rockwell International Corp. Its Galaxy series of ACDs can be found in user sites with as few as 50 agents to some of the largest call centers in the country, such as the Home Shopping Network, which has more than 2,000 agents.

Rockwell isn't the only big player in the stand-alone ACD market. Since its inception in 1985, Aspect Telecommunications of San Jose, Calif., has grown to become one of the leading stand-alone ACD vendors, with more than 200 of its Aspect Call-Center systems installed.

Another manufacturer, InteCom, Inc. of Allen, Texas, provides two ACD hardware platforms, each of which supports two ACD feature packages. InteCom's TELARI system supports as many as 1,500 agents and 1,000 trunks, while its larger System 80 supports as many as 2,000 agents and 6,000 trunks — one of the largest capacity ACDs in the industry.

While Aspect, InteCom and Rockwell cater to large users, other switch manufacturers focus on small to midsize users with products that offer ACD features. One such manufacturer, Telcom Technologies of Pomona, Calif., was the first to bring sophisticated systems supporting ACD features to the small call center market over a decade ago.

Telcom offers four models: the ECD-1000E, which supports as many as 20 agents; the ECD-4000EX, which supports up to 96 agents; the ECD-5000, which supports as many as 68 agents; and the ECD-6000, which supports over 200 agents. Systems, distributed through a network of dealers, are priced at about \$2,500 to \$3,500 per agent.

Integrated ACDs

Many businesses need the capabilities of a stand-alone ACD but find it difficult to justify the time and management investment. Those firms may find integrated ACDs to be the right fit.

Integrated ACDs are PBXs or even key systems to which adjunct processors have been added. By doing double duty, PBX or even key systems can provide businesses with traditional telephone and ACD services.

Northern Telecom, Inc. has offered ACD service on its PBXs for many years, beginning with the SL-1/ACD and continu-

ing with its current Meridian MAX ACD package. The Meridian MAX supports as many as 1,000 agents and offers a large assortment of ACD features, such as integration with a voice mail system and the ability to network systems.

AT&T offers the Definity ACD package on its PBX systems, a follow-up on the ACD package it offered on its older System 85 PBXs. Like its predecessor, the new system is designed for call centers of all sizes. The Definity ACDs can handle as many as 1,024 agents.

One noted AT&T ACD customer is AT&T American Transtech in Jacksonville, Fla., a wholly owned subsidiary of AT&T that has one of the largest call centers in the country. Transtech has three AT&T

System 85 PBXs with integrated ACD packages supporting 1,296, 1,089 and 424 agents, respectively.

Even small businesses now have access to ACD features on key systems. TIE/Communications, Inc. of Seymour, Conn., has offered ACD capability on its ONYX key system since 1989. Like its larger stand-alone counterparts, ONYX ACD provides flexible group and agent configuration, supervisory monitoring and control, as well as traffic reporting. The number of agent positions is limited by the 72-trunk capacity of the ONYX. At \$300 to \$500 per phone, this low-end alternative offers many features of larger systems at a fraction of the cost.

Another key system, Northern Tele-

com's Norstar, can provide ACD capabilities by adding Cinphony, an ACD package developed specifically for the Norstar by Citech Tele-management Systems, Inc. of Cincinnati. The package costs between \$9,000 and \$15,000 and supports as many as 56 agents.

There is a special category of integrated ACD known as programmable or dumb switches. As the name implies, these switches lack the sophisticated on-board software found in PBXs and stand-alone ACD switches. Instead, an external computer is used to instruct them how to process calls.

The advantage to these switches is flexibility because they enable users to gener-

(continued on page 42)

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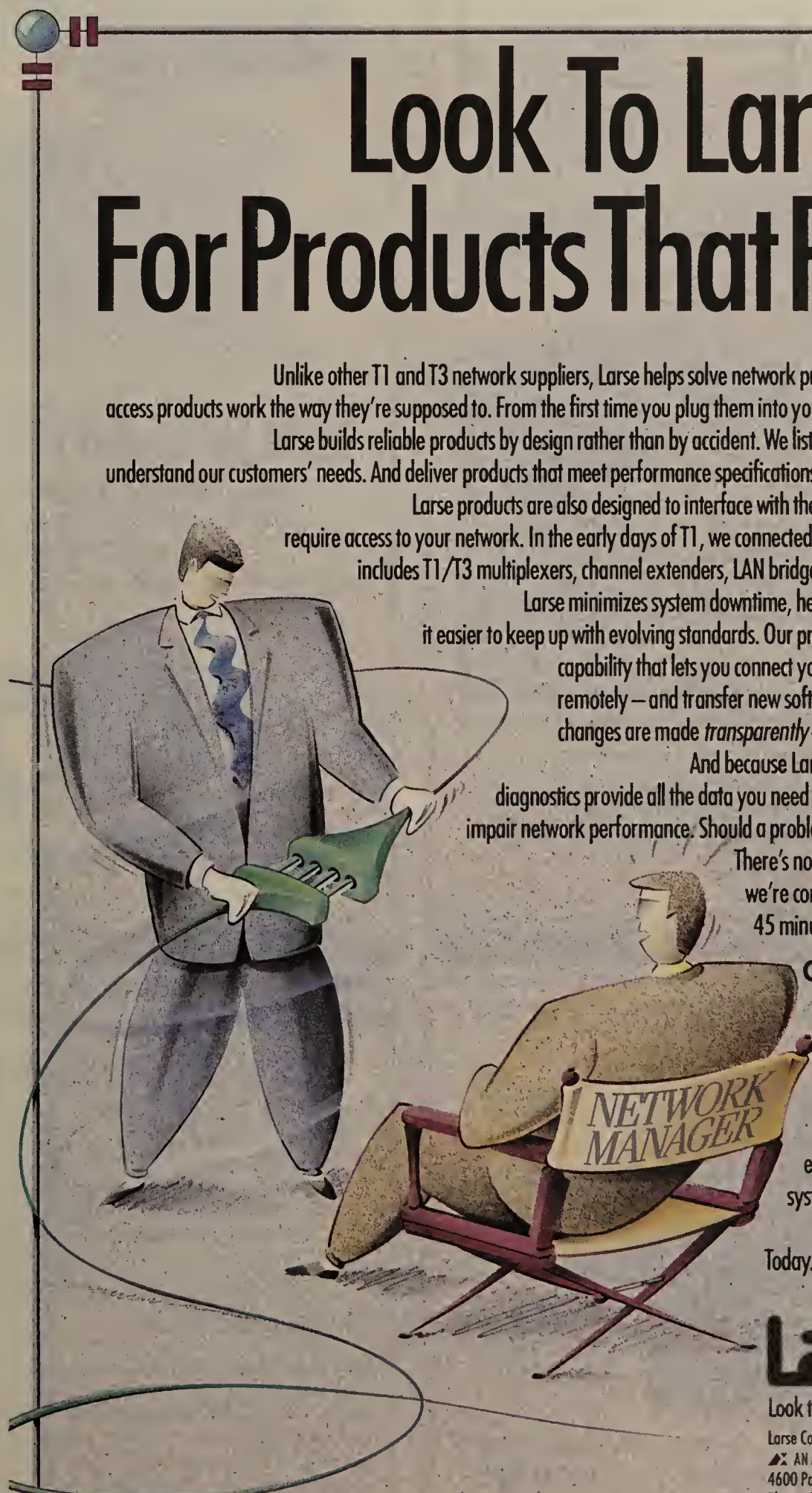
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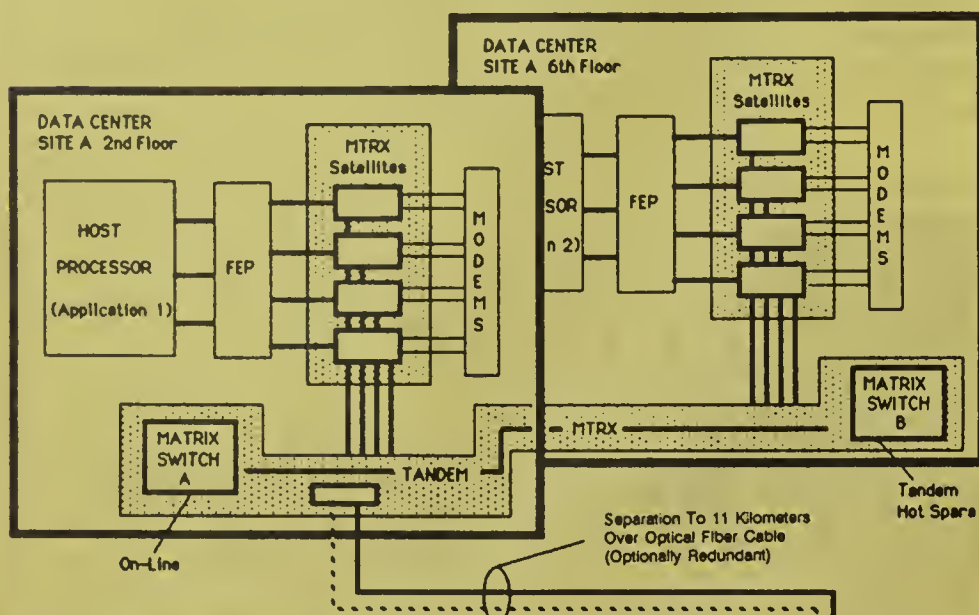
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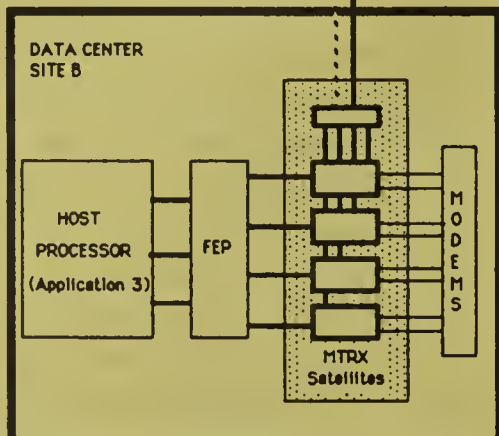


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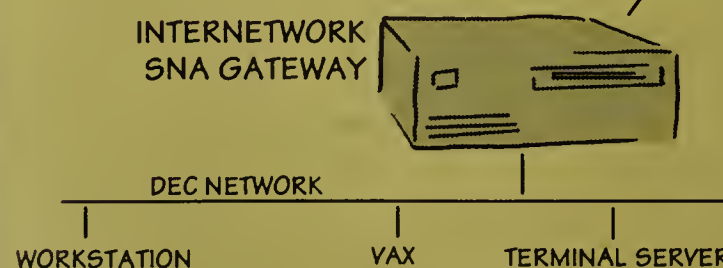
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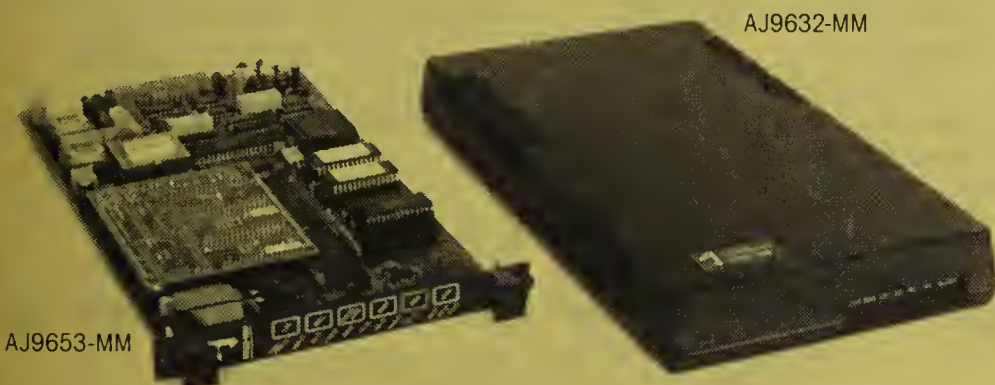
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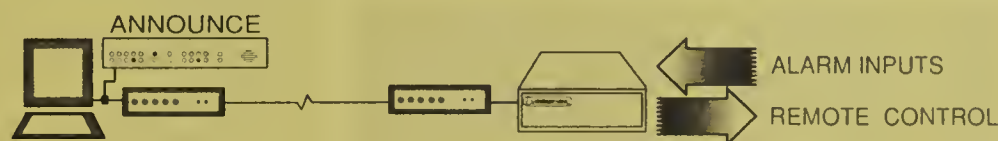
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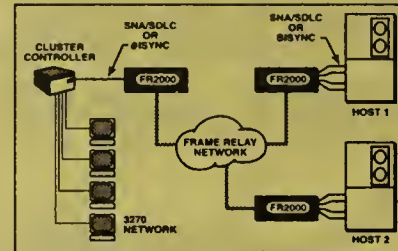
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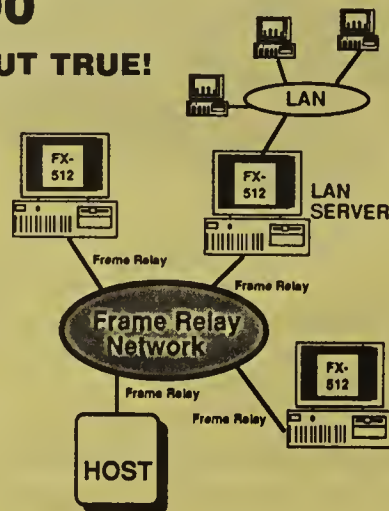
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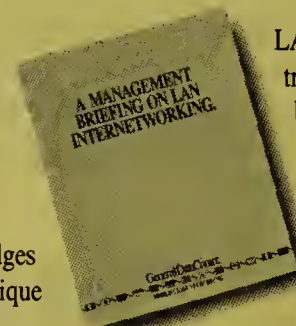
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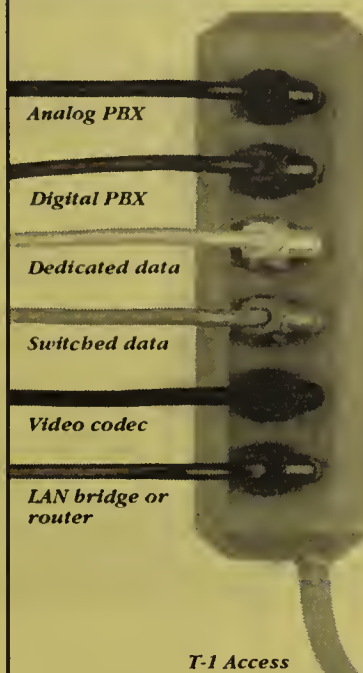
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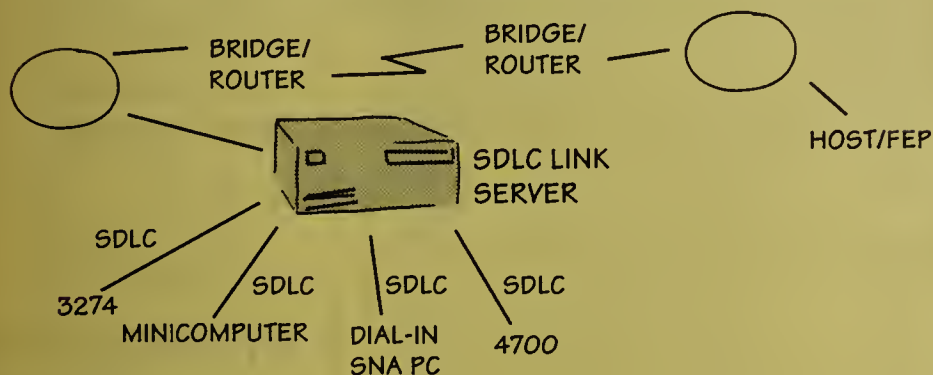
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Fractional T-1
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Switched 56
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SNA INTERNETWORKING

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Netlink's SDLC Link Server™ connects Node Type 2.0/2.1 devices to a token ring or ethernet LAN, enabling the transport of SNA data across a bridge/router-based internetwork. Reduce costs while improving network efficiency! Merge parallel networks...Eliminate SDLC lines...Conserve front end processor ports...Improve response times...With full support for IBM's NetView!

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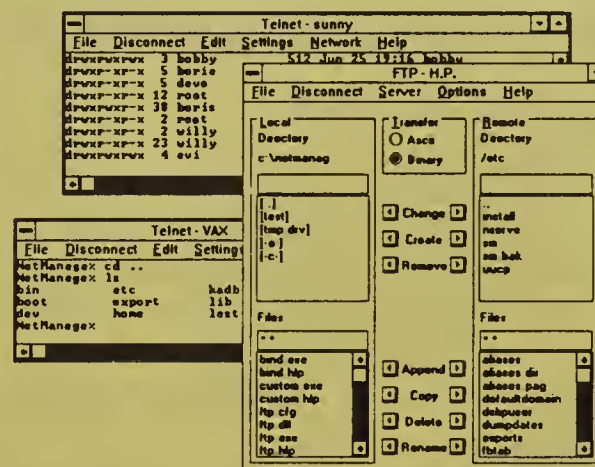
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TCP/IP NETWORKING

TCP/IP for Windows 3.0

Chameleon is the first TCP/IP communications package developed specifically for Windows 3.0 (not converted from DOS), allowing multiple concurrent sessions with different accounts and hosts. Chameleon is the first TCP/IP applications package in the market implemented as a Windows Dynamic Link Library (DLL) and not a TSR, saving precious 640K base memory.



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For more than twenty years network managers have been entrusting their network connections to Spectron switching and patching products. In data centers throughout the world, Spectron products have proven themselves reliable over millions of hours use and countless operations.

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VOICE/DATA/FAX MULTIPLEXER

DATA RACE Announces Multiplexer Breakthrough

NEW Voice/Fax/Data Multiplexer saves end-users tens of thousands of dollars

By Paul Longoria

SAN ANTONIO, Texas — If you can say yes to the next two questions then you may be in for a pleasant surprise!

1. Do you have remote computer users that need access to your LAN, mini, or mainframe?
2. Would you be interested in eliminating a substantial portion of your expensive long-distance telephone charges?

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Now, thanks to the emergence of a powerful new class of multiplexers, you can save up to \$6,000 per user per year in operating and line costs AND save up to an additional \$23,712 per year in long-distance charges for each phone line you replace!

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With today's economic climate, corporate management will be pleased with Data Communication Managers that use this affordable, new technology as an easy, fast way to save on tight budgets.

New Industry Leader

DATA RACE, a long-time price/performance leader in the statistical multiplexer field, is introducing the industry's most cost-effective, high performance Voice/Fax/Data Multiplexer series. From 8 to 64 ports, the new MACH DS multiplexers include these 5 important features:

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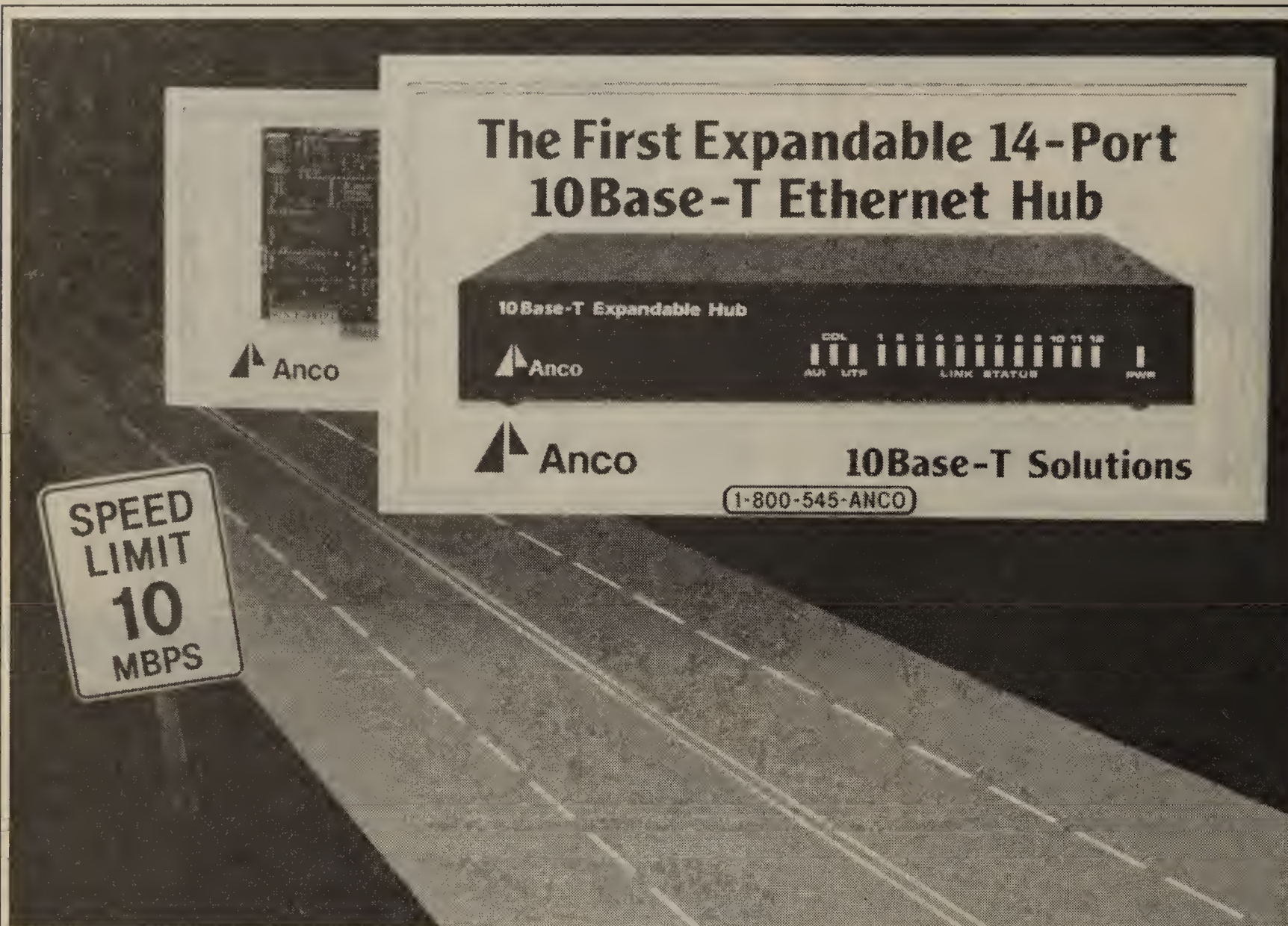
For a limited time, DATA RACE is offering a FREE savings evaluation survey and a FREE 30 day no-risk trial to qualified users. For details call 1-800 999-7223.

DATA RACE, 11550 IH 10 West, San Antonio, Texas 78230

"Our company was wasting \$83,712 a year without DATA RACE's MACH DS Mux"
— MIS Manager

Circle Reader Service No. 14

NETWORKING MARKETPLACE



The advertisement features a black and white photograph of an Anco 10Base-T Expandable Hub. The hub is a rectangular device with a front panel showing 14 ports, labeled 1 through 14. Above the ports are indicators for 'COL', 'AU1', 'UTP', 'LINK', 'STATUS', and 'POWER'. The Anco logo is visible on the front panel. The hub is shown in two views: a top-down view and a side view. The side view shows the hub's profile and the '10Base-T Solutions' branding. A speed limit sign in the foreground reads 'SPEED LIMIT 10 MBPS'. The background is a dark, textured surface.

The First Expandable 14-Port 10Base-T Ethernet Hub

Anco

10Base-T Solutions

1-800-545-ANCO

High Performance Connections For The LAN Highway

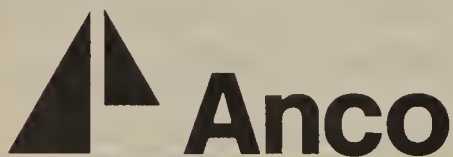
- User expandable to 13 active ports
- Compact (11½" × 1¾" × 4¼")
- Less than \$70 per port
- Available as PC half-card version

Pay only for the number of ports you need in your network. This low cost and space saving active 10Base-T Expandable Hub comes standard with six UTP ports. As your network grows you can add up to 12 ports with snap-in 10Base-T SIMM modules.* If you still need more Ethernet ports, simply cascade these Expandable Hubs through their thinnet coax ports.

For more than 10 years Anco has been supplying high quality LAN products and cable solutions to OEM customers worldwide. Anco's high performance Ethernet, Token Ring connections offer you the best value in today's fast moving marketplace. For more information about Anco's Expandable Hub and innovative line of 10Base-T products, call today.

*The 13th port can be either AU1, BNC or UTP.

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SEMINARS



Patricia Seybold's 1992 TECHNOLOGY FORUM

Distributed Object Computing:
*Applying Distributed Computing
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March 31—April 2, 1992
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Registration Fee: \$895

The 1992 Technology Forum will discuss how end users can overcome the management and technical barriers that prevent them from applying distributed and object-oriented technologies to solve mainstream business problems. Attendees will leave the conference with concrete "next steps" to put into action in their organizations.

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Show Distribution: DCI Downsizing/Cebit;
Lead Service

Mar 16 (Mar 4 Close); Topic:
Internetworking; Computer Integrated
Manufacturing (CIM) strategies;
Show Distribution: ENE '92

Mar 23 (Mar 11 Close); Topic: WAN;
Buyer's Guide: Virtual network services;
Lead Service

Mar 30 (Mar 18 Close); Topic:
Applications; Analysis of the Open
Software Foundations's (OSF) DCE and
DME; Harvey Study

Apr 6 (Mar 25 Close); Topic: LAN;
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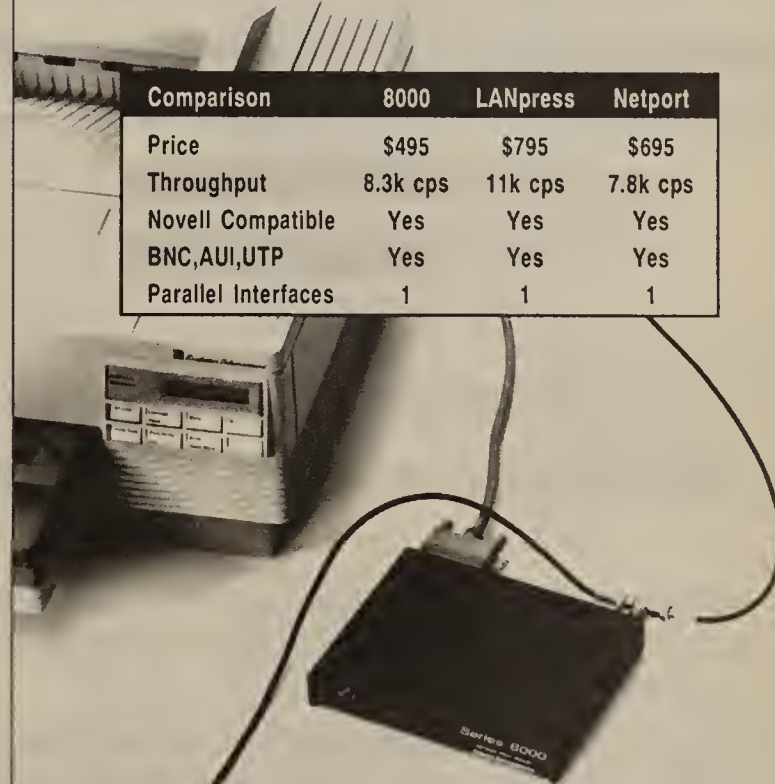
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Comparison	8000	LANpress	Netport
Price	\$495	\$795	\$695
Throughput	8.3k cps	11k cps	7.8k cps
Novell Compatible	Yes	Yes	Yes
BNC,AUI,UTP	Yes	Yes	Yes
Parallel Interfaces	1	1	1

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...On *Network World's* new *Networking Careers On-Line* that is!

Networking Careers On-Line gives networking and communications job seekers a new way to learn more about career opportunities advertised in *Network World*.

This new, free service, available through *Network World's On-Line Bulletin Board System*, was designed to provide you with the information you need to keep abreast of current opportunities and make informed career decisions. You'll see the text of an entire month's worth of *Networking Careers* employment opportunities as well as valuable additional background information on the advertising companies.



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NETWORK WORLD

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Upcoming Editorial Calendar and Ad Scheduling Guide

Issue Date	Networking Careers Space Rsrv. Deadline	Editorial Feature	Bonus Show Distribution
March 9 March 16	February 26 March 4	Selecting an International Hub Computer Integrated Manufacturing Strategies	DCI Downsizing & Cebit ENE '92
March 23 March 30	March 11 March 18	GSPD: Virtual Network Services Analysis of the Open Software Foundation's DCE and DME	DB Expo
April 6 April 13	March 25 March 31	Buyer's Guide: LAN Servers Multimedia and Networks Buyer's Guide: Substrate Data Multiplexers	Comdex Spring
April 20 April 27	April 8 April 15	Groupware Update Buyer's Guide: Voice Processors	Downsizing/Rightsizing Corp. Computing
May 4 May 11 May 18	April 22 April 29 May 6	Special Issue: SNA Update Buyer's Guide: Bridges Annual Critical Issues Facing Users Survey	ICA & Interop East
May 25	May 13	Interexchange Carrier Billing Options	

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National Sales Director/*Networking Careers*

Pam Valentinas (800)622-1108 FAX: (508)879-3167
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Stand-alone and integrated ACDs (continued on page 42)

Vendor	Model/model type	Distribution	Switching information	ACD agent sets	Proprietary voice processing and messaging	Internode networking	Data processing capabilities	Price
Intecom, Inc. Allen, Texas (214) 727-9141	TELARI/integrated	Direct sales force	Talk paths: nonblocking matrix, dial tone for everybody; number of trunks: 1,000; number of groups: 100; number of supervisors: 64; number of agents: 1,500; redundancy optional; diversity optional	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	None	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management	Internal database; OAI; applications; disaster plan	\$400 to \$1,000 per agent line
	IBX/integrated	Direct sales force	Talk paths: Nonblocking matrix, dial tone for everybody; number of trunks: 6,000; number of groups: 225; number of supervisors: 64; number of agents: 2,000; redundancy included	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	None	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management	Internal database; OAI; applications; disaster plan	\$400 to \$1,000 per agent line
JWP Telecom, Inc. Newbury Park, Calif. (800) 735-3927	Lexar 2000 ACD/integrated	Direct sales	Talk paths: 1,024; number of trunks: 2,000; number of groups: 256; number of supervisors: 7; number of agents: 256; redundancy optional;	ANI/DNIS display; RS-232-C plug; support 2500	None	None	Applications: proprietary data link; disaster plan, negotiable with customer	\$1,500 per agent line average
NEC America, Inc. Melville, N.Y. (516) 735-7000	NEAX 2400 IMS/integrated ACD Software	Direct sales force and distributors	Talk paths: nonblocking matrix; number of trunks and PBX lines determined by shelf slots available; number of groups: 50; number of supervisors: 32; number of agents: 250; redundancy, diversity included	ANI/DNIS display; RS/232-C plug; support 2500; DTerm ACD sets and specialized ACD High Density Agent Console sets	None	Uniform numbering plan; node overflow; look-ahead; voice mail: needs 3rd-party voice mail unit; data base access; central management: through Common Channel Interoffice Signaling	Internal data base; Astra; OAI: applications: NEC/IBM's Callpath; disaster plan	\$700 to \$1,700 per agent line
Northern Telecom, Inc. Richardson, Texas (800) 667-8437	Meridian MAX/integrated	Distributors	Talk paths: 2,100; number of trunks: 512; number of groups: 240; number of supervisors: 100; number of agents: 1,000; optional; redundancy; diversity included;	ANI/DNIS display; 2 B+D interface available 1992; RS-232-C plug; support 2500	Works with Northern Telecom's Meridian Mail; supports 48 simultaneous agent time slots; maximum storage: expandable; act as overflow; returns to queue	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management	Internal database; OAI; applications: Meridian Link; disaster plan: marketing agreement with Comdisco or negotiated between customer and distributor	\$1,500 to \$3,000 per agent line
Rockwell International Corp. Downer's Grove, Ill. (708) 960-8000	Galaxy 050/stand-alone	Direct sales force	Talk paths: 192; number of trunks: 224; number of groups: 128; number of supervisors: 20; number of agents: 150; redundancy included	ANI/DNIS display; 23 B+D interface; support 2500; speed dial; personal agent greeting capability	Supports 48 simultaneous conversations; maximum storage: no limit; act as overflow; returns to queue; intelligent queueing status to caller	Uniform numbering plan; node overflow; look-ahead; least busy agent; database access; central management: Rockwell Resource Management Center	Internal database, provides auto-redial of abandoned and disconnected calls; OAI: Transaction Link switch to host interface; protocols: SNA, X.25; disaster plan: customized	\$3,500 to \$4,000 per agent line
	Galaxy 3000/stand-alone	Direct sales force	Talk paths: 1,515; number of trunks: 3,024; number of groups: 128; number of supervisors: 116; number of agents: 1,200; redundancy included	ANI/DNIS display; 23 B+D interface; support 2500; speed dial; personal agent greeting capability	Supports 48 simultaneous conversations; maximum storage: no limit; act as overflow; returns to queue; intelligent queueing status to caller	Uniform numbering plan; node overflow; look-ahead; least busy agent; database access, for call routing; central management, via Resource Management Center	Internal database, provides auto-redial of abandoned and disconnected calls; OAI: Transaction Link switch to host interface; applications: SNA, X.25; disaster plan: customized	\$3,500 to \$4,000 per agent line
Rolm Co. Santa Clara, Calif. (408) 492-2000	9751 CBX, Models 20, 40, 50, 70/integrated	Direct sales force and distributors	Talk paths: 2,000 per node; number of trunks: 2,000; number of groups: 50; number of supervisors: 10; number of agents: 200; redundancy: standard on Models 50 and 70	ANI/DNIS display; 2B+D interface; RS/232-C plug; support 2500	Works with Rolm's PhoneMail; supports 128 simultaneous conversations; maximum storage: 480 hours; act as overflow; returns to queue	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management, via Call Center Resource Manager	Internal database; OAI; applications: Call Path and RolmBridge 5250; disaster plan	\$600 to \$1,200 per agent line
Siemens Private Communication Systems, Inc. Boca Raton, Fla. (407) 994-8100	Saturn I ACD-A, B and C/integrated	Tel Plus Communications and Siemens Gold Seal Dealers	Talk paths: 112; number of trunks: 96; number of groups: 64; number of supervisors: 64; number of agents: 96 agents per group; redundancy optional	ANI/DNIS display; support 2500	Works with Siemens' Voice Processing M((last word coming)); supports 8 simultaneous conversations; maximum storage: 11 hours; act as overflow; returns to queue	None	Internal database	\$350 to \$800 per agent line based on system size and configuration
	Saturn IIE and III ACD-A, B and C/integrated	Tel Plus Communications and Siemens Gold Seal Dealers	Talk paths: 496; nonblocking; number of trunks: 496; number of groups: 64; number of supervisors: 64; number of agents: 96 agents per group; redundancy: none on IIE, optional on III	ANI/DNIS display; support 2500	Works with Siemens' Voice Processing Module; supports 8 simultaneous conversations; maximum storage: 11 hours; act as overflow; returns to queue	None	Internal database	\$350 to \$800 per agent line based on system size and configuration
Shared Resource Exchange Plano, Texas (214) 985-2600	Vision ACD/integrated	Distributors	Talk paths: 280; number of trunks: 576; number of groups: 45 trunk groups and 64 agent groups; number of supervisors: 1; number of agents: 63 agents per group	ANI/DNIS display; support 2500	Supports user configurable number of simultaneous conversations up to limit of the switch; maximum storage: 10 min per message internal, 11 hours external; act as overflow; returns to queue	None	Internal database; OAI	\$400 to \$500 per agent line
Tadiran Electronic Industries, Inc. Largo, Fla. (813) 536-3222	Coral/integrated	Dealers	Talk paths: 1,024; number of trunks: 1,800; number of groups: 64; number of supervisors: 100; number of agents: 100 agents per group; redundancy optional; diversity included	ANI/DNIS display; 2B+D interface, European PRI specification; RS-232-C plug; support 2500	Supports 16 simultaneous conversations; maximum storage: 24 hours; act as overflow; returns to queue	Uniform numbering plan; node overflow; least busy agent; voice mail; database access; central management	Internal database; OAI; disaster plan: on negotiation with factory and dealer	\$200 to \$500 per agent line
Teknekron InfoSwitch Corp. Fort Worth, Texas (817) 267-3025	ISD/ACD, Series III/stand-alone	Domestically: direct sales force; internationally: distributors	Talk paths: 1,056; number of trunks: 1,100; number of groups: 122; number of supervisors: 32; number of agents: 1,000; redundancy optional	ANI/DNIS display; 2B+D interface; RS-232-C plug; support 2500	Works with Teknekron's Infovoice; supports 1,000 simultaneous conversations; maximum storage: Unlimited; act as overflow; returns to queue	Uniform numbering plan; node overflow; look-ahead; least busy agent; voice mail; database access; central management: InfoCenter	Internal database: accessible by outboard systems and the Pay Roll internal program; OAI: InfoExchange Gateway	\$2,500 to \$4,000 per agent line
Telephonic Equipment Corp. Irvine, Calif. (714) 250-9400	CPS1 ACD/works behind Centrex, PBX or hybrid key	Direct sales force and distributors	System provides 48 universal ports, each configurable as a trunk, agent line or supervisory position; number of groups: 8;	RS-232-C plug; support 2500	Includes automated attendant, informs caller's position in queue, allows caller to exit queue, can overflow to voice mail or interactive voice processing system	None	Internal database	\$728 to \$1,275 per agent line

ACD = Automatic call distributor
ANI = Automatic number identification

DNIS = Dialed number identification service
LAP B = Link Access Procedure B

OAI = Open Application Interface
UCD = Uniform call distributor

SOURCE: LABELLE & LABELLE, CLEARVIEW, WASH

Stand-alone and integrated ACDs (continued from page 41)

Vendor	Model/model type	Distribution	Switching information	ACD agent sets	Proprietary voice processing and messaging	Internode networking	Data processing capabilities	Price
Telrad Woodbury, N.Y. (516) 921-8300	Symphony II UCD/integrated	Authorized interconnects nationwide	Talk paths: 172; number of trunks: 96; number of groups: 16; number of supervisors: 16; number of agents: 32 agents per group	Support 2500	Supports 32 simultaneous conversations; maximum storage: 100 hours; act as overflow; returns to queue	None	Disaster plan	\$2,000 one-time charge for ACD stats package; UCD comes with the basic Telrad Symphony II system
	Digital KeyBx with optional PPR package	Authorized interconnects nationwide	Talk paths: nonblocking; number of trunks: 48; number of groups: 16; number of agents: 16 agents per group	2B+D interface; RS-232-C plug; support 2500	Supports 32 simultaneous conversations; maximum storage: 100 hours; acts as overflow; returns to queue	Optional proprietary KeyNET data networking package (works through the switch)	None	\$2,000 one-time charge for ACD stats package; UCD comes with the basic Telrad Symphony II system
Toshiba America Information Systems, Inc. Irvine, Calif. (800) 888-0660	Perception E, Perception EX/integrated	Independent dealers	Talk paths: 320; number of trunks: 128; number of groups: 16; number of supervisors: 16; number of agents: 128 agent lines with 256 agent ID codes; diversity included	DNIS display; 2B+D interface; RS-232-C plug; support 2500	Supports 64 simultaneous conversations; maximum storage: 550 hours; act as overflow; returns to queue	Uniform numbering plan; look-ahead; least busy agent; voice mail; central management	Internal database; applications; disaster plan, negotiated at the dealer level	Quoted only by dealers
	Perception 4000/integrated	Dealers	Talk paths: 1,920 universal ports; number of groups: 32; number of supervisors: 32; number of agents: 512; redundancy optional; diversity included	DNIS display; 2B+D interface; RS-232-C plug; support 2500	Supports 64 simultaneous conversations; maximum storage: 550 hours; act as overflow; returns to queue	Uniform numbering plan; least busy agent; voice mail; database access; central management	Internal database; applications; proprietary data link; disaster plan, negotiated at the dealer level	Quoted only by dealers

ACD = Automatic call distributor
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(continued from page 33)

ate the commands needed to instruct them to perform certain functions, as opposed to modifying the millions of lines of code that come with larger ACDs to perform the same tasks.

An example of such a dumb switch is the SDS-1000 from Summa Four, Inc. of Manchester, N.H. The SDS-1000 ranges in size from around 100 ports to a maximum of 1,776 ports. Multiple systems can be networked for even larger configurations. Pricing depends on configuration.

Addressing the big four

With so many products to choose from, users will likely need to weed out some of the competitors. A good way to start is to weigh each product against four main criteria.

First is reliability. When it comes to the operational integrity of a call center, stand-alone ACDs win. This is because if the ACD quits working, users can still press their PBX into service. Conversely, should the PBX go down, you still have the ACD on which to rely for incoming calls because stand-alone ACDs can switch calls, too. When an integrated unit goes on the blink, everything shuts down.

Of course, a way to guard against equipment failures in either type of ACD is to order redundant components, such as a second CPU, memory bank, backplane, power supply or disk drive. But this will push up the price.

Flexibility and growth is the second criterion. An integrated ACD provides a little more flexibility than a stand-alone ACD. With an integrated ACD, users simply issue a few commands and the PBX's resources, such as line

cards and station sets, can be re-allocated to support ACD functions. This enables users to turn a PBX extension into an additional ACD agent position or reassign a direct-inward dial port from ACD usage to general PBX use.

The third criterion is vendor responsiveness. PBX makers such as AT&T and Northern Telecom are larger and have deeper pockets than stand-alone ACD vendors such as Aspect. Therefore, PBX makers have more money to develop such advanced features as Integrated Services Digital Network interfaces. On the other hand, users falling into a market niche catered to by stand-alone manufacturers can benefit from a lot of specialized experience and attention.

The final criterion is the underlying ACD technology. Ten years ago, consultants were dithering over the merits of varying technologies such as pulse code modulation vs. delta modulation for voice digitization. Those issues are largely of no concern these days. The skull-cracking competition of the past decade has flushed away all the poor or questionable technologies with one notable exception: the 2500 telephone set.

Beware of 2500 sets

Users should run screaming from any ACD that relies on 2500 sets. These user-hostile relics are hated by agents everywhere, and rightly so, because 2500 sets are cumbersome, awkward and, with their reliance on FLASH, # and * commands, are prone to error. Using these commands complicates the dialing processes to the point where agents often lose callers. ACDs should rely on electronic telephones that support

single-button access to important call processing features.

No matter what kind of ACD a user buys, agents should never have to cuss it out. Instead, the prudent network manager will create an evaluation team of several agents who will provide feedback during the selection process. The following are questions agents will want to have answered:

- Is the set's display easy to read in any light? Some sets use LEDs that glow in the dark, while others use an LCD display similar to those found in laptop computers, which use light reflected from some external source.
- Are the buttons clearly labeled and easy to use, even for people with large fingers?
- Are there headset jacks on either side of the set's base? Agents who are left-handed really appreciate this feature.
- What is the sound quality? Listening to side tones whistling in your ear all day doesn't do a lot for morale or productivity.

Network managers will want to know if the set can work with dialed number identification service and ISDN's automatic number identification. To support ANI, the set must be able to attach to an ISDN Basic Rate Interface (BRI) line. Sets that include an RS-232 port will be able to receive data over a BRI line and pass it to the agent's terminal.

Once an ACD and its appropriate agent set have been selected, the ACD becomes an electronic front door to the company that can be more important than the physical front door. If the ACD breaks, it can't stay broken for long. But what can users do to protect themselves?

They should obtain a guaran-

tee from the vendor and make sure it spells out suitable penalties for nonperformance. Users should also make sure the ACD maker can have a replacement system delivered in a specific period of time in case the primary system fails.

MIS packages

Net managers also need to manage ACD usage. Like the human heart, an ACD has two chambers. One pumps traffic through the system to agents, and the other pumps management information through the system to an external MIS designed to take care of both the ACD and the agents who work with it.

There are few ACDs that do not include an MIS or statistics package. However, not all of these MIS or statistics packages are good. The big gripe has to do with decipherability — the data may be there, but it is buried in a welter of mnemonics and codes, and presented in a counterintuitive format.

Most stand-alone and integrated ACDs are guilty of this sin. They do not provide easy-to-use management tools; that is why a third-party MIS industry exists.

Users in the market for an ACD should ask each vendor to supply a list of third-party MIS products that work with their system.

MIS software runs on a microcomputer and enables managers to, among other things, track ACD usage, establish agent work schedules, generate a mix of reports such as historical usage, and forecast future ACD usage based on historical data.

MIS packages at the very least enable users to manually enter management data pulled off the ACD from its operator console. A

growing number of packages are able to download management data from the ACD to the microcomputer via an RS-232 link. Some even provide a link that enables users to collect management data from central offices.

The ACD/computer link

Microcomputers running MIS packages are not the only computer links that ACDs support. Several ACD makers have released ACD-to-computer link software.

The basic idea is to have an ACD gather information about incoming calls from ISDN features such as ANI and the station number of the agent to which the call is being switched.

This information can then be passed to a computer, which searches its database to match the ANI number to the telephone number in a customer record. If a match is found, the customer record is sent via a data net to the computer terminal screen of the agent about to receive the call.

InteCom was one of the first ACD manufacturers to offer an ACD-to-computer link, called an Open Application Interface. The software allows third-party application software to be integrated easily with InteCom's ACD.

Rockwell offers its Transaction Link ACD-to-computer software that enables its products to work better with computers and other voice processors when processing calls.

Transaction Link enables Rockwell ACDs to work with leading sales automation software tools from firms such as TCS Management Group, Inc. and Brock Control Systems, Inc., as well as with computers made by IBM,
(continued on page 45)

Options spice up ACD market

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ACDs begins on page 32.

Stand-alone ACDs are self-contained devices that include on-board processors, software and switching equipment designed to handle large volumes of incoming calls efficiently. Integrated ACDs consist of software and add-on processors that enable a private branch exchange or key system to act as an ACD.

Central office ACDs

A primary option to traditional ACDs is a central office-based service. During the past two years, many regional Bell holding companies began offering an ACD service, claiming it gives the same type of benefits that Centrex has long provided as an alternative to PBXs and key systems.

There are advantages to an ACD service, according to Bill Church, a principal at Call Center Solutions, a Florham Park, N.J.-based consulting firm specializing in call centers. "For people who already subscribe to Centrex, adding ACD service is a cost-effective proposition," he says.

"For those who aren't currently Centrex subscribers, the economics will vary from RBHC to RBHC because of different rate structures," he adds. "The size of the [call] center will also impact the economics. Below about 20 or 30 agents, CO-based ACD service becomes less cost effective."

The availability of central office-based ACD service has grown dramatically in the past two years. Northern Telecom, Inc.'s DMS-100 central office switches now provide ACD service at more than 50 local telephone companies, including all the RBHCs and some major independents. And AT&T's PINNACLE ACD system is



Carrier-based ACD services, customer premises-based call routing software pose threat to traditional ACDs.

in use at 20 local telephone companies.

In 1989, Nynex Corp. became the first RBHC to offer a central office-based ACD service through its New York Telephone Co. "We

got off to a slow start because of a strike and the usual lack of awareness associated with introducing a new product, but interest and sales have really begun picking up," says Vlad Gurevich, product

manager for central office-based ACD services at New York Telephone, which declined to divulge sales figures for the service.

Why would a company choose
(continued on page 44)

Options spice up ACD market

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central office-based ACD service over premises-based offerings? Gurevich cites economics, expandability and reliability as the major benefits.

"First, since the switching equipment resides in the central office, the customer doesn't need to purchase a switch," Gurevich says. "Secondly, CO-based ACD call centers don't require as many trunks. Usually, the rule of thumb is that you need 1.3 to 1.4 times as many trunks as there are agents to provide for queuing." Callers are held in a queue when all agents are busy.

"If you have 100 agents, you need 130 to 140 trunks," Gurevich says. "But with CO-based ACD service, the queuing is done in the central office. New York Telephone offers 100% queuing at no extra charge. [This means] the customer doesn't have to lease those extra 30 or 40 trunks."

Central office-based ACD services also offer inherent geographical flexibilities. Agents can be located anywhere within the central office's serving area. This means multiple call centers can be serviced by a single central office without losing centralized control or requiring the user to purchase multiple stand-alone or integrated ACD systems.

Even customers contemplating the relatively economical option of integrating ACD functions on a PBX may want to consider central office-based service. "If you plan to add just five agents, there's no problem [with using an integrated ACD]," Gurevich says. "But if you want to add 50 agents, the PBX may not be equipped to handle the additional load. You may end up having to add another cabinet or pay for a major system upgrade. And there's the ongoing cost of that extra trunking needed for queuing."

In New York, central office-based ACD service is tariffed separately so customers do not have to subscribe to Centrex to get ACD service. Arrangements in which central office-based ACD service is bundled

with or unbundled from Centrex varies between phone companies.

New York Telephone's central office-based ACD service requires a five-agent minimum, and rates depend on the leasing period and features. Customers can rent on a month-to-month basis or sign one- to five-year contracts. The longer the lease, the lower the price. Charges range from \$32 to \$39 per month per agent for the basic feature package and from \$37 to \$42 per month with all features included.

"When you compare \$32 per month for CO-ACD to \$26 [per month] for a trunk on a stand-alone ACD and then factor in the extra trunks you'd need for queuing plus the cost of the switch itself, CO-ACD becomes very economical," Gurevich says.

Central office-based ACD service also has built-in reliability as central offices rarely go down. But if one did, all the premises-based ACD switches attached to the central office would be down, as well.

Just such an outage is a major concern for many managers of large call centers. To address this issue, New York Telephone is offering a little-publicized central office-based ACD service for disaster backup. For about \$29 per month per line, customers can set up a remote center that uses 2500-type telephone sets with a single line. If their switch goes down, the carrier can redirect their calls to the remote site, where agents can log in and continue receiving calls until service is restored at the permanent site.

Despite the benefits of central office-based ACD services, several critical factors may limit their acceptance. At the low end of the market, PBX and key systems with ACD capabilities have a large advantage over central office-based services: Most users prefer to deal with a single vendor. Users satisfied with their current switch vendor are less likely to bring in another, even if it is the local phone company. The only time these users are likely to consider a central office-based service is if they have a problem with their current vendor or equipment.

At the high end of the ACD market, call

center managers require the sophisticated features, flexibility and control that central office-based services may not offer. Lack of these features could offset any cost savings advantage of central office-based service.

Net-based ACD service

In addition to central office-based ACD services, another carrier-based ACD option lurks on the horizon. In a technical briefing last October, MCI alluded to a network-based ACD service offering that could debut some time this year. Initially, the offering will help users spread call loads among multiple call centers. Ultimately, MCI would offer services from its own ACD switching equipment.

This year, MCI plans to make available its Intelligent Routing Capability service to help customers with multiple ACDs better manage call traffic. Using Common Channel Signaling System 7 or Integrated Services Digital Network, the carrier will monitor incoming call traffic and each ACD. It will automatically reroute calls from overloaded ACDs to less busy ones.

Under consideration, but not yet scheduled for introduction, is a network-based ACD service, which would have MCI owning and maintaining the ACD equipment connected to its network. While central office-based ACD services offered by local carriers require a subscriber be directly attached to the ACD-equipped central office via the local loop, MCI's plan would allow subscribers to be located almost anywhere. As with local carrier central office-based services, subscribers could have ACD service without purchasing and maintaining equipment at their own sites. MCI has not said how it would price such a service.

Central office- and network-based ACD services share many advantages as well as several limitations. Because they would not own the equipment, users would have less control, flexibility and access to sophisticated features with carrier services. Still, the possibilities that network-based ACD services offer are attractive to firms looking to establish a number of small, geographically dispersed call centers either nationwide or internationally.

If MCI's service is successful, other interexchange carriers will almost certainly offer their own network-based ACD services. However, the companies have said little on the subject publicly. Increasingly, intelligent networks have made virtual networking more viable in the past several years. Network-based ACD service may be merely one more example of an overall trend.

Central office- and net-based services are not the only options to buying a stand-alone ACD. Another is the PhoneServer and Distributed Call Center software products from Billerica, Mass.-based Unifi Communications, which provide what is described as "CO-based ACD service with a twist."

Both software packages run under Unix on an 80386- or 80486-based microcomputer. PhoneServer forms a core operating platform for the Distributed Call Center application and future applications. PhoneServer and Distributed Call Center work together with carrier services to mimic the operations of a traditional ACD.

Analysts and industry experts seem to agree that Unifi's products represent something distinctly different. Unlike traditional ACDs that take a passive approach to call management, PhoneServer and Distributed Call Center take an active

approach.

A traditional ACD passively receives calls from a central office switch and, with the help of internal hardware and software, routes calls to the proper agent. In recent years, new carrier capabilities have enabled ACDs to know more about the incoming call, such as the number being dialed (dialed number identification service) and the caller's number (ISDN's automatic number identification service).

With these features, ACDs passively receive call information from a central office switch that helps them more intelligently route calls to the proper agent and retrieve data about the caller from a computer database. The call and the data are then simultaneously delivered to the agent.

The PhoneServer and Distributed Call Center combination turns this one-way street into a two-way highway. Working together, the packages passively receive information about incoming calls from an ISDN-equipped central office switch. But they actively send information back to the switch, telling it where to send the call.

This is done by exchanging call routing information with the central office switch over the D channel of a Basic Rate Interface (BRI) line. The actual switching of the call is performed within the central office, not at the customer's premises — a dramatic departure from traditional ACDs. In fact, PhoneServer and Distributed Call Center effectively turn the central office switch into an ACD, eliminating the need for a switch at the customer site.

With PhoneServer and Distributed Call Center, calls can be routed, or distributed, to virtually any agent in any location outfitted with a BRI line. This could be done within the same building, across town, across the state or even across the country. This feature will be particularly attractive to firms that have decentralized personnel but a desire for centralized management.

Since PhoneServer and Distributed Call Center allow the central office switch to assume the role of an ACD, growth is only limited by the line capacity of the central office. Need more agent positions? Just install additional BRI lines.

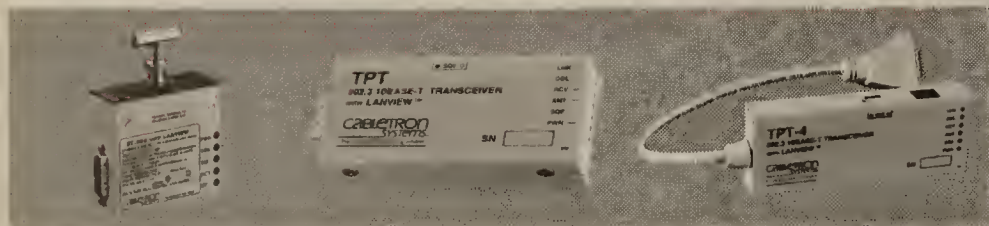
The success of PhoneServer and Distributed Call Center depends on the ubiquity of ISDN, however. PhoneServer can only be used where BRI service is available. But with Bell Communications Research predicting that 63.8 million ISDN lines will be installed nationwide by 1994 and the imminent adoption of National ISDN 1 as a de facto ISDN standard for interoperability among various ISDN switches and customer premises equipment, the future looks promising.

The Distributed Call Center, including PhoneServer, costs \$30,000 for a 10-agent configuration (PCs are not included). Support for additional agents (excluding PCs) is available for \$1,100 each.

Carrier-based ACD services and Unifi's offerings increase the options users have to purchasing, managing and maintaining traditional ACDs. The options are likely to increase as carriers build more intelligence into their nets and products emerge that enable users to tap that intelligence.

In the meantime, existing ACD options offer users benefits that are not readily available with stand-alone and integrated ACDs that come in every size, configuration and price range. Particularly, users that do not want to concentrate telemarketing agents in a single site and those that are too small to justify building a large call center will find these options attractive. **■**

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ACD MISs

Vendor	Product	ACDs supported	Distribution	Services available	Data collection modes	Computer used	Price
Affinitec Corp. St. Louis (314) 569-3450	Ontraq, Analyzer, Forecaster, Scheduler	AT&T Definity and System 75/85, Northern Telecom, Inc. Meridian, SL-1, DMS-100 and 200, Rockwell International Corp. Galaxy, Rolm Co. CBX 8000, 9000 and 9751, AT&T 5ESS, Teknekron InfoSwitch Corp., Aspect Telecommunications and Telecom Technologies	Factory direct	Real-time display; custom reports: screens, printouts and statistical compilations can be customized by the user; reader boards; history reports: up to 38 months of data; forecasting: based on up to 24 months of data; scheduling: agent assignments; traffic engineering; multisite management	RS-232 on ACD; manual: full editing of auto-entered and manual-entered data	IBM PS/2, AT&T 6386 for Forecaster/Scheduler when running alone	Priced by the module, from \$5,000
Cybernetics Systems International Corp. Coral Gables, Fla. (305) 443-1651	Employee Management & Planning System (EMPS) and Schedule Station	All major ACDs	Direct sales force, comarketing arrangements with Northern Telecom, Fujitsu, Rolm, AT&T, Intecom and various other ACD manufacturers and distributors	Real-time display; custom reports; history reports; forecasting; scheduling; multisite management	RS-232 on ACD; manual	80386- and 80486-based IBM PS/2 or PC, IBM RISC/6000, Stratus, AT&T and Unisys; EMPS runs on Unix-based platforms	EMPS: from \$22,500; Schedule Station: from \$17,500 to \$27,000
HTL Telemanagement, Ltd. Burtonsville, Md. (301) 236-0780, (800) 225-5485 (U.S. or Canada)	ACD Designer, Hills Turbo Tables	All brands of ACD	Factory direct	Forecasting: mathematical modeling tool for multiperiod/trunk ACDs, accounting finite trunking calls abandoned, agent work time and economic optimization mode; traffic engineering: Hills Turbo Tables: An Erlang-B, Erlang-C and Poisson add-on for Lotus Development Corp. 1-2-3, provides traffic engineering for up to 1,000 trunks and 1,000 agents, computes grade of service, agents required, delay distributions and average speed of answer; multisite management	Manual	IBM PCs	ACD Designer: license fee \$2,500 with yearly renewal fee of \$650; Hills Turbo Tables: \$145 onetime charge
Nova Systems, Inc. Cambridge, Mass. (617) 354-4241	ACD Reporter, Nova-Max, Nova Scheduler, Nova 9000 real-time display boards	ACD Reporter and Nova Scheduler: Rolm CBX 8000, 9000 and 9751, Northern Telecom Meridian SL-1; Nova-Max: SL-1; Nova 9000: available for most switches	Dealers, representatives, factory direct	Real-time display; custom reports; reader boards; history reports; forecasting; scheduling; multisite management	RS-232 on ACD; manual	80286-, 80386- and 80486-based PCs	ACD Reporter: from \$10,800 to \$23,500 (includes installation, training and 1-year support); Nova Scheduler: from \$6,000 to \$8,700; Nova 9000: from \$6,000; Nova-Max: from \$19,800
PaceCom Technologies, Inc. Bellevue, Wash. (800) 346-1336	Vista 100, 200 and 500, Gateway, Scheduler	Rolm CBX 8000, 9000 and 9751, Northern Telecom SL-1-C, Siemens Saturn	Factory direct, Norstan Communications, Inc.	Real-time display; custom reports; reader boards; history reports; forecasting; scheduling; traffic engineering; multisite management; switch management	RS-232 on ACD; line scanner; CO data link: Vista 200 provides a continuous CO busy study; data exportable to other programs; manual	80286- and 80386-based PCs	Vista 100: from \$8,000 to \$13,000; Vista 200: from \$8,000 to \$10,000; Gateway: from \$10,000; Scheduler: from \$8,000
Perimeter Technology, Inc. Nashua, N.H. (603) 882-2900	Perimeter Real-Time System	Northern Telecom DMS-100 Centrex ACD, Northern Telecom SL-100 ACD	Distributors worldwide	Real-time display; custom reports; reader boards; history reports: produces commadelineated files for export to other application programs; forecasting; scheduling: Optional; multisite management; switch management	X.25 on ACD; data-entry for employee-specific data	Compaq 386/486 acts as server for DOS-based PC clients	\$10,000 to \$100,000, depending on options
Professional Resource Management, Inc. Palatine, Ill. (708) 359-3990	Agent Power, Agent Power II, Switch Boss	Agent Power: Rockwell Galaxy, AT&T, Northern Telecom SL-1, Harris Corp. and others; Agent Power II: Rolm CBX 8000, 9000 and 9751; Switch Boss: Rolm CBX 9000 and 9751	Factory direct	Real-time display; custom reports; reader boards; history reports; forecasting: agents staffing and trunking; scheduling: bid award system for scheduling agent shifts, breaks, holidays, vacations; traffic engineering; multisite management; switch management: Switch Boss for the Rolm CBX 9000 and 9751	RS-232 on ACD; manual	80286- and 80386-based PCs	Agent Power and Agent Power II: from \$9,000 to \$30,000; Switch Boss: from \$3,000
The SYMON Co. Sugar Land, Texas (800) 827-9666	Systems Monitor	All brands of ACD, plus Northern Telecom DMS; Centrex UCD plus all brands of mainframes, minicomputers and microcomputers	Direct sales force	Real-time display; provides commadelineated file exportable to other application programs; reader boards; history reports; forecasting; scheduling within other application programs; traffic engineering: within other application programs; multisite management: accepts a mix of brands and provides cross-site management; switch management: within other application programs	RS-232 on ACD; line scanner; custom order, CO data link; manual: full editing capabilities and free-form data entry	IBM PS/2 Model 30/286 with MS-DOS and AT bus	About \$1,900 per agent group (based on a system comprising 20 groups)
TC Telemanagement, Inc. Clearwater, Fla. (813) 532-2200	ACD-100, ACD Management System	ACD-100: for Northern Telecom DMS-100 Centrex; ACD Management System: Northern Telecom SL-1 Meridian	Authorized distributors and factory direct	Realtime display; customer reports; selective data retrieval; reader boards; history reports; forecasting; scheduling; traffic engineering; multisite management; switch management	ACD-100: CO data link; ACD Management System: RS-232	ACD-100: IBM 80386 or compatible PC; ACD Management System: IBM PS/2 Model 50 or compatible	ACD-100: \$25,000 to \$70,000; ACD Management System: \$12,000 to \$30,000
TCS Management Group, Inc. Nashville (615) 327-0811	TeleCenter System	Any ACD	Distributors, ACD manufacturers and factory direct	Forecasting; scheduling; traffic engineering, ACD trunking requirements, multisite management, forecasting for networked ACDs; real-time adherence; custom reports	RS-232 on ACD; ACD MIS or report processor; manual	DOS-based 80386 PC, Unix-based 80386 PC, HP minicomputer on request	TeleCenter System: from \$15,000
Telecorp Products, Inc. Walled Lake, Mich. (313) 569-7100	ACD Manager, Telecorp Move, Add & Change System	Northern Telecom SL-1 and Meridian SL-1 ACDs	Factory direct	Real-time display; custom reports; reader boards; history reports; forecasting; scheduling; traffic engineering: Erlang-B, Erlang-C, Poisson; multisite management; switch management with Move, Add & Change system	RS-232 on ACD; manual	80286-based PC or higher	ACD Manager: from \$4,500 to \$15,000; Move, Add & Change System: from \$2,500 to \$7,500

ACD = Automatic call distributor
CO = Central office
UCD = Uniform Call Distributor

This chart includes a representative selection of ACD MISs. These carriers may offer other such services, and other carriers not included may offer a full range of comparable products and services.

SOURCE: LABELLE & LABELLE, CLEARVIEW, WASH.

Telecom Buyer's Guide

continued from page 42

Digital Equipment Corp. and Tandem Computers, Inc. and voice processors made by Intervoice, Inc. and Syntellect, Inc.

Applications supported via an ACD-to-computer link will undoubtedly become more appreciated as time moves on, but the ACD/computer marriage is still on its honeymoon.

As could be expected, the various switch and computer makers

developed their own versions of the overall ISDN standard. Consequently, things that should be able to exchange ANI still can't.

This is compounded by the fact that ANI is in legal limbo. If the Luddites prevail and ANI is proscribed, the ACD/computer

marriage will be annulled before it's consummated.

This points to the importance of choosing an ACD and MIS package that best suites a user's needs. An ACD is a high-visibility business tool. The marketing people who typically don't truck

with telecommunications folk will suddenly be most interested in call processing when it comes time to select an ACD.

Only a careful examination of available products and services will help net managers satisfy the needs of marketing folk. **■**

Firm looks to LAN internet

continued from page 1

five to 10 years because of a lack of capacity."

The company's network team designed a centrally managed LAN internet for the new two-building Society Center headquarters that consists of token rings on every floor occupied by the bank and a Fiber Distributed Data Interface backbone linking the buildings to the company's nearby data center.

By setting up the net to provide access to any LAN, regardless of the protocols used, the bank hopes to be in a position to reengineer business practices, such as loan processing, so multiple LAN-based departments can work on projects simultaneously rather than sequentially, Gusman said.

The hub- and router-based LAN internet is designed to support about 1,400 users in the new tower and adjacent historic building, as well as another 2,000 employees in the data center.

In the tower, the firm initially will occupy 13 floors: two through 12, in addition to 55 and 56. The bank has an option to move onto more floors in the future. Society occupies all nine floors of the adjacent building, which was gutted and recently refurbished. That building includes a dark data room and has been wired in a similar fashion to the new tower.

Each floor of the tower is outfitted with a shielded twisted pair-based 16M bit/sec token-ring LAN, said Richard Csontos, a senior network analyst at Society. Nodes on the ring are linked via a

star configuration to one of two SynOptics Communications, Inc. System 3000 wiring hubs on each floor that can be reconfigured to support two rings per floor if traffic growth warrants it, he said (see graphic, page 1).

The hubs come with FDDI-ready backplanes that can be upgraded to support FDDI as Society adopts new bandwidth-intensive applications such as imaging, said Paul Darkovich, project leader for the Society



Society's new complex

Center's information technology group.

Each floor's token ring is tied via a fiber-based 16M bit/sec token ring to one of eight other hubs in the Society Center's data room, said Jeff Kuster, a senior network analyst at Society.

The data room hubs are tied to an FDDI backbone via two Wellfleet Communications, Inc. Concentrator Node bridge/routers, Kuster said. This backbone links the Society Center with a nearby data center. The company has implemented a T-1 link off its routers at Society Center to back up the FDDI backbone, he added.

According to Csontos, the firm opted to link the hubs on each floor to the bank of data room hubs in order to provide for connectivity between LANs on different floors. This setup also enables the company to manage the fiber-based token rings.

Society is initially using the routers for bridging between LANs, Kuster said. But the company may need to call on the Wellfleet devices' multiprotocol routing capabilities to support communications among users on different net operating systems.

Society will manage its inter-network from the remote data center via a Sun Microsystems, Inc. SPARCstation running SynOptics' LattisNet Network Manager for Unix software and Wellfleet's Network Configuration Utility net management software, Csontos said. The system gives Society management control down to the port level from a central site, he explained.

The firm also has implemented SynOptics' Reduced Instruction Set Computer-based Network Control Engine modules in the data room hubs to perform some processing of network traffic data locally before relaying summary reports to a central network management station at the main data center.

Overall, the network project team members said they have put in place a network that will meet Society's future needs, whatever they may be.

"Our design goal was to build a network flexible enough to meet the evolving needs of Society," which plans to quadruple in size by the turn of the century, largely through acquisitions, Darkovich said. ■

Firms change integrated mgmt.

continued from page 2

View were selected for inclusion in the Open Software Foundation, Inc.'s (OSF) Distributed Management Environment (DME). Novell's huge installed base will attract third-party vendors, and SunNet Manager will likely survive because it was the early leader in the market and currently has the largest installed user base.

"We're dead serious about this business. We've partnered with people like IBM and Groupe Bull [SA], gone after OSF and X/Open [Company, Ltd.] and put our software on Sun platforms because we want to be the dominant software platform provider," said Jeff Thiemann, HP's OpenView business development manager.

Dave Mahler, vice-president of marketing of Remedy Corp., a developer of generic management applications, adds, "There will be some shakeout, and I don't care who wins as long as it's only a small number of players. I can't port to six or eight platforms."

"We think the winners are going to be SunNet Manager, the OpenView/DME platform and the Novell platform," he added.

Analysts said the future is less clear for vendors such as Lexcel and NetLabs, Inc., whose claim to fame is hardware independence and the use of such standards as the Simple Network Management Protocol to manage multiple vendors' devices.

But the systems fall short of true integrated management because they cannot always correlate alarms and events to present a single, unified network view.

"They need to be viewed as tactical, short-term patches until products become available to allow you to run real integrated management applications," Passmore said.

Analysts also caution against integrated management platforms from router and hub vendors. Some say platform building belongs in the hands of large systems and software firms like HP, IBM, Novell and Sun, and smaller hardware vendors do not have the widespread backing it takes to succeed.

Jim Herman, a principal at Northeast Consulting Resources, Inc. in Boston, said smaller players will survive only if they back efforts such as the DME, which is intended to be a vendor-neutral integrated network and systems management platform.

Lexcel said it plans to do just that. For its part, NetLabs will support Atlas, the net management platform under development by Unix International, Inc., which has pledged to support DME application program interfaces (API).

Scott Helmers, director of advanced research and development for hub vendor Cabletron Systems, Inc., said the artificial

intelligence capabilities at the core of its Spectrum product will differentiate it from others in the field. Cabletron also expects to build DME APIs on top of Spectrum, enabling it to run DME-compatible applications.

Proteon, Inc., in addition to developing or contracting for software that enables its products to be managed by other vendors' management systems, also recently announced its own multi-vendor net management platform, dubbed OneView, said Kumar Shah, senior product manager at Proteon.

According to Herman, there are two things users need to consider when choosing a net management system. "The primary one is who you think is going to offer the widest range of software [applications] on their platform," he said.

The other is to balance short-term vs. long-term gain. For instance, can a particular platform provide enough short-term benefit to justify its expenditure? If not, what are the long-term implications for the product, and will it be one of the survivors?

Bill Maybaum, president of Fi-

"It's clear I can't buy the onetime be-all and end-all solution for net management."

▲▲▲

UB distributes mgmt. to users

continued from page 2

central console manage the entire network, while permitting administrators to run their LAN segment independently."

A key component of AIM is Ungermann-Bass' Object Modeling Technology (OMT), according to Ralph Ungermann, the firm's president and chief executive officer. Announced last month, OMT abstracts SNMP Management Information Base (MIB) data from network nodes and gives administrators an abbreviated view of the device's MIB variables.

"OMT reduces the amount of data a manager must view on a certain object, which is important in management of large networks," Waldbrand said.

Under the AIM architecture, a domain NetDirector station appears as an icon on a global NetDirector screen as if it were any other managed device on the network. The domain NetDirectors at the individual sites are polled for status, allowing a central ad-

ministrator to determine fault activity without polling individual network devices.

Administrators can also obtain a more detailed view of a particular domain by initiating a client connection to any distributed NetDirector server.

Since all domain NetDirectors communicate with one another and appear as icons on the global station, a central administrator can monitor the entire network, despite the distributed management architecture. If necessary, the central manager can rein in control of a particular domain as if it were a local administrator.

NetDirector with AIM capabilities will be available in the second quarter as a value-added option. It will be priced between \$8,000 and \$19,500, depending on the number of devices it manages.

ProTools partnership

In a related move, Ungermann-Bass announced a partnership with ProTools, Inc. for local-area network analysis applications to augment the management capabilities of its NetDirector.

Ungermann-Bass will integrate ProTools' remote net monitoring and analysis applications with its NetDirector platform. Together, the two applications will allow a central administrator to view and troubleshoot individual LANs on a network.

The first application, called Cornerstone Agent, which runs on a domain NetDirector station, provides monitoring and analysis for administrators at remote sites, enabling them to gather statistics, set alarms, filter data and perform protocol analysis.

The second application, called Foundation Manager, provides advanced analysis and management capabilities at the enterprise level by enabling the administrator to view all the Cornerstone Agents on the net.

Both applications support the SNMP remote monitoring MIB, provide monitoring on a distributed basis, and support Ethernet and token-ring LANs.

The Cornerstone Agent costs \$1,295, while the Foundation Manager is priced at \$8,995. Both will be available in the second quarter. ■

Bellcore set for next step in plan *continued from page 1*

specifications could spur availability of PRI at the local level and make it easier for users to combine local and long-distance services in building end-to-end ISDN networks. National ISDN 2 also standardizes provisioning and billing processes to help regional Bell holding companies offer ISDN more quickly and at a lower cost.

Users, RBHCs, switch manufacturers and customer premises equipment vendors joined forces to create National ISDN, a set of Bellcore Technical References, in an effort to resolve nagging interoperability problems with ISDN equipment and speed the availability and use of the technology.

National ISDN 1, which was announced one year ago this week, defined how customer premises equipment accesses an ISDN switch and how multiple vendor switches interoperate using a Common Channel Signaling System 7 network.

"In National ISDN 2, we've chosen a robust set of services and features that will make ISDN more attractive to the masses," said Al Hood, Bellcore's executive director of ISDN switching and signaling requirements.

General Motors Corp., Eastman Kodak Co. and First Chicago Bank Corp. are among the users that worked with Bellcore and the RBHCs to develop National ISDN 1 and National ISDN 2.

"National ISDN 1 addressed carrier and switch manufacturer issues," said Claude Stone, First Chicago's vice-president of EDI market development and a longtime member of the National ISDN Users' Forum. "National ISDN 2 begins to describe the services and features users need."

Industry acceptance is the key to National ISDN 2's success.

When Bellcore announced National ISDN 1 a year ago, the top three U.S. switch makers, as well as IBM and Digital Equipment Corp. announced backing for the specification.

AT&T last week became the first switch manufacturer to publicly announce plans to implement National ISDN 2 in the software used by its 5ESS central office switch. Northern Telecom, Inc. said it will also embrace National ISDN 2.

Richard Carr, a member of the integrated voice services management group at AT&T, said switch software supporting National ISDN 2 will be ready for testing by phone companies in 1993.

Hood expects other switch manufacturers to follow suit over the next few months.

"National ISDN 2 protects everyone's investment in National ISDN 1 [products]," Hood said. "We're not obsoleting anything with the new specification."

The most important new item in National ISDN 2 is ISDN PRI, the inclusion of which represents a firm commitment by the RBHCs to market PRI, which until now has taken a back seat to BRI service in the local loop.

"Each switch manufacturer has its own PRI implementation," Carr said. "What we've done here is create the first standardized PRI definition. We want the terminal portability we're getting with BRI devices with PRI products."

National ISDN 2 also standardizes how the RBHCs will support ISDN PRI's call-by-call service. This lets users dynamically reconfigure PRI channels to support changing service requirements.

In addition, National ISDN 2 will lay out the ISDN version of features, including call forwarding and call waiting.

"We're trying to standardize the way customers use and interact with the most popular ISDN [calling] features," Hood said. A standardized set of features would eliminate the need to teach employees how to use features on a switch-by-switch basis.

National ISDN 2 also lays out a standard passive bus implementation, which lets users reduce line costs by linking up to eight devices to a single BRI line. □

Carrier wants to know troubles *continued from page 4*

avoid three major network outages last year that left millions of its customers in five states without service. The outages were blamed on a software bug in control devices on the carrier's Signaling System 7 (SS7) network.

According to Bell Atlantic officials, one of the critical problems they face is not having access to information about failures in other carriers' networks that could be used to indicate weak points.

"There had been quite a number of outages in other regions [caused by the same type of equipment] that we never found out about," a Bell Atlantic spokesman said. If the carrier had known about those problems, "it is very likely we could have prevented the outages or, at the least, restored service much more quickly."

Bell Atlantic wants vendors to provide information on past net problems and glitches that may crop up in the future. The spokesman said the carrier felt this step was necessary because other industry forums may not get information out quickly enough or provide historical information.

Experts have determined that the outages last summer in Bell Atlantic's network and two others in Pacific Bell's net were caused by a software bug that dis-

abled congestion control commands in network signal transfer points (STP).

An industry investigation revealed that DSC Communications Corp., the maker of the STPs in question, had sent out the defective software as part of a routine upgrade procedure. The firm admitted to Congress last year that it had used an abbreviated testing procedure because the changes were considered to be minor.

Also, Bell Atlantic is undertaking two major internal initiatives to improve net reliability. First, the carrier is working on a plan to back up all STPs in the network with STPs from another vendor. Although Bell Atlantic currently uses both DSC and AT&T as suppliers for its nine STP pairs, the company has never tried using multivendor equipment for direct backup, Seazholtz said.

However, using equipment and software from multiple vendors may be the only way to ensure that software bugs do not bring a network down. "Software diversity is one way to get dramatic improvements in the overall reliability of SS7 networks," he said.

Secondly, Bell Atlantic has written special computer instructions that will prevent network designers from inadvertently linking STPs or other critical network components over the same fiber-optic cable or through other common network equipment. □

Rockwell intros ACD-to-host link *continued from page 4*

ules include the Basic Connect Manager, which transfers calls to the least busy agent group, and the Call Manager, which manages the length of time a call remains in queue.

The product also contains modules for working with a voice response unit, the Script Manager module and the VRU Manager

Data from hosts in finance and sales can be accessed from the same ACD-to-host interface.

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module. Together, they obviate the need for many calls to reach a live agent.

The Script Manager enables users to customize a list of options that a voice response unit presents to callers. If callers request account information, for example, the unit prompts them for an account number and passes that information to the VRU Manager module.

The VRU Manager module,

which uses 3270 protocols to communicate with the hosts, then uses the information to search and retrieve the customer's file from the appropriate host and feeds the information to the voice response unit, which informs the caller of the balance.

The VRU Manager can also use information garnered from the voice response unit to send a call and a customer file simultaneously to a waiting agent if access to a live agent is required.

Because the software works with several hosts at once, data from hosts in customer service, finance and sales, for example, can be accessed from the same ACD-to-host interface, Parsons said.

In addition, CGII can manage a call center's outbound calling. For instance, a call center may be charged with calling several customers with overdue bills. The Predictive Dial Manager module takes a listing of customers with overdue bills stored on the host, calls their numbers and provides the customer file to an agent's terminal screen at the moment the outbound call is completed.

Rockwell said it is the first call center software that can perform both outbound and inbound call management.

Available in May, an entry-level version of the software, which supports 25 agents, is priced at about \$95,000. □

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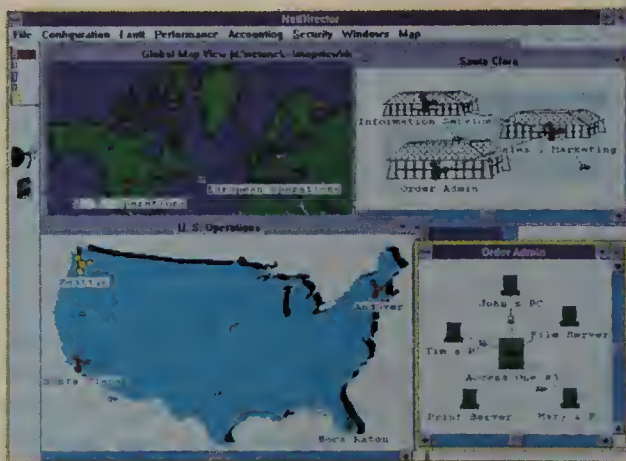
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